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EDINBURGH

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MEDICAL JOURNAL,

COMBINING

THE MONTHLY JOURNAL OF MEDICINE

AND

THE EDINBURGH MEDICAL AND SURGICAL JOURNAL.

VOL. XXV.—PART I.

JULY TO DECEMBER 1879.



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28.11.44

EDINBURGH:

OLIVER AND BOYD, TWEEDDALE COURT.

LONDON: SIMPKIN, MARSHALL, AND CO.

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EDINBURGH: PRINTED BY OLIVER AND BOYD, TWEEDDALE COURT.

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THE
EDINBURGH
MEDICAL JOURNAL.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*The Study of Mental Disease : being the Introductory Lecture delivered in the University of Edinburgh, on the Institution of the Lectureship on Mental Diseases, May 1879.* By T. S. CLOUSTON, M.D., F.R.C.P.E.

ALL classes of men have generalized ideas of mind according to the daily experience and the practical necessities of life of each. It is not left to the philosopher, metaphysician, and psychologist to study mind. The jurist, politician, priest, and sociologist each has his own system of mental philosophy. Nay, the policeman and the horse-breaker have each a crisp and concise theory, learned in the schools of experience and tradition—not formulated it may be, but still perfectly definite and practical. The physician in practice has, as much as any other man, opportunities of seeing a wide range of mental phenomena. He comes into intimate personal relationship with men and women in circumstances where the reasoning and feelings, the instincts and propensities of human nature are exposed to his view, with as little concealment or hypocrisy as is possible. There are very few of the serious diseases he treats but affect the minds of his patients more or less in some way. He has to study carefully the effects of their outward surroundings and of the impressions from without on the minds of his patients. He has to calculate the effect of his own speech and conduct, as well as those of all who surround them. He has to do with mind in its most undeveloped form up through all its stages of growth and education, and he has the opportunity of seeing the effects on it of every form of disease and debility. In addition to this he is called on to

treat mental symptoms, when through their striking abnormality they have themselves become a disease.

The whole conduct of things in the world is necessarily so based on the assumption that every man is a responsible being with a sound mind, that any exception to this, when it occurs, has a very startling effect. In the early ages it was not admitted that such a thing was possible, and when a man's mind was clearly altered from its normal state, and his mental personality changed, they explained it by the theory that some other personality had entered temporarily into the man, driven out and overpowered the true occupant, and that the man was possessed with a devil, or some spirit good or bad other than his own. It is certainly no wonder that before the physiology of the brain was studied such a theory was adopted. The facts were so inexplicable on any current hypothesis of mind, that they needed a supernatural cause. Looked at from the human and social point of view, no other disease at all approaches mental disorder in the terror it inspires, the sense of helplessness it causes, the deep distress to relatives, and the disturbance of all social ties. It is no wonder that its study was backward, and its treatment barbarous, up till quite recent times. But the modern scientific spirit could not, and did not, allow this field to lie fallow, and its study was hardly begun when its profound interest and great importance were seen. It was soon recognised that the mode of study of this department must be precisely the same as that required for physiology and pathology. The physiologist had to study normal mind as a form of brain energy; the physician had to investigate abnormal mind in the same observational and inductive way as he studied diseases of the chest. It was very soon apparent that the brain was the sole organ of mind, and that the functions of that organ, being multi-form, and having relationship to every part and energy of the body, could only be properly studied in relation to one another. It was found impossible to place quite apart the motion and sensation functions, the sleep, the animal appetites and instincts, the special senses, the speech, the memory, the love of life, the affective, the reasoning, and the controlling functions. The great problems thus opened up have exercised a fascination over many of the greatest men in our profession in modern times, men whose general professional work did not lie specially in the treatment of mental disease. I need only mention Pinel, Esquirol, Feuchtersleben, Pritchard, Abercrombie, Combe, Schroeder van der Kolk, Brodie, Holland, Griesinger, and Laycock. And as for the pure psychologists who are now studying mind from the physiological point of view their name is legion. In this country alone Herbert Spencer, Darwin, Huxley, Lewes, Maudsley, and Bain represent a power of original investigation and exposition scarcely ever excelled in any one department of science; and this is not wonderful, for if the highest functions of the brain and its derangements are not worthy of study by the best minds, what can be supposed to be so? Teaching mental diseases as a practical department of medicine was begun by Esquirol in France,

and was greatly advanced in our own time by Griesinger in Germany. It has assumed a name (Psychiatry) and a place in Germany in almost every school of medicine there. It was begun in Edinburgh by my predecessor at the Royal Edinburgh Asylum, Dr Skae, in the year 1853. He successfully taught in a combined clinical and systematic course many generations of students. His lectures were full of interest and practical instruction. His immense experience and strong clinical faculty made him an admirable teacher. He provided at least sixteen asylums with their chief medical officers from among his assistants at Morningside, and many more from among his pupils. It is to the late Professor Laycock that this University is indebted for introducing the teaching of Medical Psychology and Mental Diseases in 1857. He had devoted much attention to obscure nervous affections, he had a true zeal for the study of mind and mental aberration from a physiological point of view. His was a speculative mind, with a strong tendency to weave the facts which he gathered from every source and the speculations they excited in his mind into a great web of all-embracing generalization. His teaching was very suggestive, and it undoubtedly had the effect of directing the minds of many of his students towards the mental as well as the other functions of the brain. It was the means of influencing many of them in the line of study they took up. I find that no fewer than ten of the physician-superintendents of Scotch asylums were students of his; and there are still more men who have held important lunacy appointments in England, who were his students. No branch of physiology or medicine is now more actively studied than the field of brain function and disease; there has been a marked revival lately, to which Dr Laycock undoubtedly contributed; in fact, some of the most energetic writers in general cerebral physiology and pathology derived some of their original impulses from him. When I mention the names of Drs Hughlings-Jackson, Rutherford, Ferrier, Lauder Brunton, M'Kendrick, Crichton Browne, Herbert Major, Stirling, and Morrison Watson, who were all his students, I have said enough to prove this. Dr Laycock had the vantage-ground of the University position; Dr Skae had possession of the clinical field at the Royal Edinburgh Asylum, and this division was the weak point of the teaching here. Dr Laycock knew this and deplored it, and when I was appointed to my present office in succession to Dr Skae in 1873, he made very flattering and earnest overtures to me to combine the advantages of both positions. I saw that not only was the divorce between theory and practice unnatural, but that to the students it was unfair and injurious. I therefore joined Dr Laycock by a private arrangement, and my association with him was a source of the utmost pleasure and much instruction to me during the three years we worked together. No one could take part in his course without being influenced by his comprehensive ideas of the subject. Those ideas are best expressed by the title of his chief work, *Mind and Brain; or, the Correlations*

of *Consciousness*, and by the first part of the Synopsis of his course in the University Calendar: "An Exposition of the Relations of Consciousness to the Laws of Life in general, and the Anatomy and Functions of the Brain in particular." Such was his idea of what is called Medical Psychology. In a strict sense this term is a misnomer; if psychology is a real science, it is one and indivisible, and you might as well talk of medical mathematics or medical physics as medical psychology. But inasmuch as medical men have not the time, and only a few of them the special aptitude for the study of the whole field of psychology, that portion of it which has a relation to their physiological studies and the practical work of their profession has been divided off—not, it is true, by very defined lines—and called medical psychology, just as certain departments of electricity and acoustics may be called medical *par excellence*. An unambitious definition of medical psychology might be "Mind—as it concerns Doctors." As regards the metaphysical department or views of mental philosophy, those of our profession who were taught them are, I suspect, inclined to agree with Goethe that "all professional men labour under a great disadvantage in not being allowed to be ignorant of what is useless." But under any definition, you see that medical psychology embraces the study of mental diseases and something more. As this University has now limited the scope of this lectureship to mental diseases, I shall confine myself to that branch of medical psychology.

The necessity which exists for a knowledge of mental disease to medical men is best proved by a few facts and figures. An exceptional power has been granted by law to every member of our profession in practice to give a certificate, the effect of which is to deprive any British subject of his personal liberty on the ground of insanity. Surely such a responsibility implies an obligation on our part to know something about the subject of mental disease. How can we know that which we do not study? And how can the medical practitioner give advice and sign such all-important certificates about a disease which the medical student has never seen or had explained to him clinically? As well might you ask a man to give a life insurance certificate that a patient was free from heart disease who had never listened to a cardiac murmur. This ignorance is fraught with an unusual danger. While allowing, nay almost compelling us to grant lunacy certificates, the law punishes us severely when they are improperly given, whether through mere ignorance or wrong intention; and the common law of the land allows any man who thinks he has been aggrieved or wronged by such a certificate to sue and punish the granter of it. Several members of our profession have thus brought their reputations to grief, and themselves to pecuniary ruin. The fact that, out of 12,176 medical certificates of insanity and admission papers sent to the office of the Commissioners in Lunacy, 2314, or one-sixth had to be returned to the writers for amendment, does not, I fear, tend to raise the opinion of the lawyers, to whom those certificates are submitted, as

to either the business power or the knowledge of insanity in our profession. I fear they are apt to ask, If the knowledge necessary to sign an ordinary lunacy certificate is so deficient, what may be expected in the still more important matter of the knowledge requisite for the treatment of the disease? I have had the last 500 certificates sent to the Royal Edinburgh Asylum gone over, and I find that 456 of them, or 91 per cent., omit a certain point, not at all important from a medical point of view, but so essential from a legal point, that Sir Cresswell Cresswell once decided that it was a *sine quâ non* of a valid and legal certificate according to English law.¹ And it is not as if the signing of a certificate of lunacy were a matter of rarity. There were at the beginning of last year 83,539 persons under certificate as insane in the United Kingdom. This number required 100,117 medical certificates, or an average of at least five certificates to each practising member of our profession. This takes no account of the certificates granted in the cases of patients that have recovered or died, and no account of the certificates of mental incompetency or competency that have to be granted for other reasons than placing a patient under care. The signing of such certificates is one duty, but not the most important that falls to medical men in relation to mental disease. The mental hygiene of individuals, families, and society, the early recognition of mental symptoms, their suitable treatment, the precautions that have to be taken to prevent accidents and risk of life, the solution of the most important question of home or asylum treatment, the confidential family advice as to professions and careers in life, and as to the formation of engagements and marriages, the grave decisions that have to be come to as to questions of civil and testamentary capacity and criminal responsibility—all or any of these questions you may have before you at any time after you receive your medical qualification.

When we consider that one in every 300 of the population is a registered certified lunatic, and that 1 in 30 of those who attain the age of 20 ultimately become inmates of asylums,² the marvel is how our profession has hitherto got along so well with so little systematic teaching or clinical experience of mental disease. We must remember that for every person who is obviously insane there is probably another who has been threatened at some period of his life with its symptoms, or labours under more harmless and less obvious varieties of it. If this vast mass of brain disease is not worth study, let the general profession be freed from responsibility in regard to it; if this cannot be done, then in the name of all that is reasonable let its study find a place in every medical

¹ The designation and residence, marked 4 in the statutory form. The legal importance of this part consists in the fact that it is the only part of the certificate where the patient is individualized and identified. Suppose "John Brown" is being certified without his designation and residence, what means is there of legally distinguishing him from the thousands of the same name in the country?

² Dr Chapman, *Jour. Ment. Science*, April 1879.

curriculum, as urged by the Earl of Shaftesbury, the veteran head of the English Lunacy Commission for the past forty years, and by almost all the medical witnesses of repute who gave evidence before the Lunacy Law Committee of the House of Commons of 1877. But for invidious comparisons, I think that I could show that there is more than one subject which medical students have now to study, and on which they undergo searching examinations, that cannot compare in practical importance with mental diseases.

From another point of view the study is important, for there are now more than 500 medical appointments held in the three kingdoms in connexion with the treatment of mental diseases, as Commissioners in Lunacy, Lord Chancellor's Visitors, Inspectors of Asylums, Medical Superintendents, Assistant Medical Officers, and Consulting Medical Officers to Asylums. Most of those appointments are held by those who never had the opportunity of studying in any scientific or clinical way when students the subjects of mental disease. Even for the new degree in public health, mental hygiene and disease have been quietly ignored. A very few years must see a great change in regard to this.

Much nonsense is now-a-days talked about the relationship of the so-called specialities in medicine to the profession in general. On the one hand, they are referred to in a mysterious way, as though they were occult and very sacred side chapels off the temple of medicine, to enter which special rites had to be gone through; and on the other, they are spoken of as ugly excrescences on the noble form of the building. They are, in fact, simply the result of the enormous increase of knowledge, which renders one man or one set of men incapable of being equally versed in the whole field. The science of medicine has become so wide, that we can only cultivate it in parts. Therefore we specialize, and must specialize more and more. But, most fortunately for the future unity of our profession, its practical exigencies are such that most of its members must know something of all its specialities. The further out the speciality is from the main roads, the worse it is for itself in the long-run. It is most difficult to avoid the narrowness and the self-complacent conceit that always goes with narrowness. The department of medicine that has to do with the treatment of mental disease is, unfortunately for itself, a rather strongly marked speciality, for when patients are very ill they must be sent to hospitals for the insane under the charge of medical men who make that their business, and do not usually practise much beyond those hospitals. But then most cases have to be treated at home for a time by the family physician at first, and many cases do not need to be sent to those hospitals at all, but can be treated outside. And as time goes on, our knowledge of mental disease will become more generally diffused and more accurate, and such hospitals will be opened as fields for clinical study, as one department of Morning-side Asylum will be to you this summer. The state of things to be

aimed at no doubt is, that all medical men should know something of all the specialities, that all specialists should be well grounded in general medicine and surgery, and that they should habitually mix with each other to widen their ideas. There is a law of demand and supply in this matter as in all others. If the general public did not put faith in specialists for certain special diseases, it would not go to them, and they would cease to exist. It has been said that there are now-a-days special doctors for every organ of the body except the umbilicus, but probably the reason there are no umbilical doctors is that the usual surgical operation on the umbilical cord combines simplicity and profit to so great an extent that almost no section of the profession will consent to give it up.

The study and treatment of the diseases of the mental functions of the brain has such close relations to the study of all other brain functions, and to the treatment of all other brain disorders, and the brain is so incontestably the dominant organ of the body, affecting all its tissues, controlling all functions, regulating all its energies, that there ought to be less risk of its producing narrowness, or one-sidedness of view, than almost any other speciality. If mind is great, surely a special study of its derangements cannot be a belittling task. It might even be argued that this study is the highest branch of medicine, inasmuch as it is confessedly the most difficult, and relates to the most important part of man. The existence of mental disease affects the position and prospects of those who suffer from it more than any other disease whatever, and society and the state take more direct control of them than any other class except the criminals. When any other organ is affected by disease, it is after all merely a part of the man that suffers; when the convolutions of the brain go wrong in their mental functions, it is the man himself that is affected. The rest of the human organism looked at teleologically surely subserves the brain, and all the other functions of that organ subserve the mental. Everything that lives, looked at from the evolutionary point of view, tends towards mentalization, and all the tissues of all the nervous organs of all the types of animal life find their acme in the human brain convolutions. From the purely psychological point of view, too, a study of mental disorders is essential before the laws of mind will ever be properly understood. Pathological change always throws light on physiological function.

It has always been one of the great hopes of those who are interested in the prevention of mental disease, that a more thorough knowledge of its nature and treatment, and an extension of the knowledge we at present possess among the medical profession, would lead to a diminution of its total amount. If the brains that by inheritance had a tendency to this disease could be subjected during their development and education to the right sort of hygienic and preventive influences, beyond all doubt we should have less of the disease in the world. If during matured life those same brains could be

made to avoid the exciting causes of the disease, this would certainly still further lessen the evil. If educated medical knowledge were brought to bear on the customs of our civilization to secure that they were consistent with brain health, much might be hoped for; and lastly, if the first signs that betoken danger to the mind health were observed, and the first symptoms of disease noticed, and their true significance apprehended, every physician in practice knows that their further onset and progress could often be arrested. I do not say that our knowledge of brain function in its large aspect, and the influences that affect it in the individual or the family, is as yet mature enough to do all these things; but how shall we know if we do not study? and are not many minds better than a few, and more likely to attain fuller knowledge of the matter? There is a curious sort of morbid delicacy, too, in the public mind about the matter, which often prevents a man, when he feels his mental balance not so secure, from consulting his doctor. That abominable and cruel phase of public sentiment, which connects shame and disgrace with mental disease, does an immense amount of harm to individuals and to society, and our profession should by all means fight against it. That this prejudice of the Middle Ages should exist at all, is the strongest proof of the general ignorance of the matter. Except our profession makes the study of mental disease more general, we shall never be able fully to combat and overcome this most injurious public feeling, because it is only by professional and scientific study that we get over the ideas of repulsiveness to many facts of nature. It was only when they were scientifically studied that surgery and midwifery overcame the ancient prejudices against them.

The first thing the physician in his capacity of medical psychologist has to do, is to form in his own mind a standard of health. And to do this he has to go to nature. He can no more do it from books than he can form a conception of the healthy breathing or heart sounds from books. He has to do with man as he exists in nature in all the stages of his mental development. No ideal man as he ought to be will suit his purposes. If he adopted such a standard, he would be inclined to look on very many of the people he met out of sorts mentally, and fit for segregation from their fellows. He cannot, like the clergyman, go to his Scriptures or his church and find his ideal; he cannot look on man as *A Mind* or *A Soul* with a troublesome body attached; he cannot shut the roads to his senses, and construct out of his subjective knowledge the man or the mind that is to be of service to him for comparison; he cannot even look on him as a bundle of faculties, feelings, and potentialities tied together with the small cord of life. His method of study must be the physiological method, assisted, as far as they can be depended upon, by his own subjective experiences and those of his patients. How is the function of sensation studied? By accurate and scientific observation as to the parts of the body

where it is present, by measurements of the degree in which it resides in different organs, by examination into the nerves that convey peripheral impressions to the brain, how they end in the tissues, where they go to in the cord and in the brain. In this investigation the subjective sensations of the patient are essential, but could we ever have had any real scientific knowledge of the function of sensation had we trusted to this alone? Animals cannot express their sensations in words, and yet where would our knowledge have been, had not Sir Charles Bell been able by experiment on animals to demonstrate that there are distinct sets of nerves for sensation and motion? And how incomplete would have been our knowledge, how helpless our therapeutics, if the function had not been studied in its conditions of loss, diminution, exaltation, and alteration in disease! Just so it is with the function of what we may call mentalization. Whatever our philosophical or religious beliefs may be in regard to the Ego and the soul, however strongly we may feel ourselves pressed on the horns of the dilemma that to feel implies a personality, and that as yet physiology has not devised any hypothesis by which we can even conceive personality as a brain function,—in spite of this, we must, when we come to study and treat patients whose mental functions are deranged, go on the hypothesis that mentalization is a brain function as much as sensation or motion.

The student of mind from this point of view is met on the very threshold by the obvious fact, that it differs enormously in its normal manifestations in different persons and sexes, in different stages of life, and in different races. He sees, too, that it is manifestly influenced by the other functions of the organism, and the organs through which those functions are performed. These facts prepare him to accept to some degree, at least, the generalizations that previous students of the subject have made as to the existence of different mental types associated with bodily characteristics, or the doctrine of temperaments and diatheses. He sees, for example, that there are certain persons in whom the nervous functions are very active, and seem to dominate the other functions strongly. Such persons feel keenly, move quickly, and think clearly, these qualities being impressed on the form, contour, and nutrition of the whole body. He soon comes to observe that persons with such a neurotic temperament are liable to diseases special to themselves, and that when they suffer from ordinary diseases, the neurotic predominance in their constitutions often affects the character and duration of such diseases. No physician of experience but knows that neuralgias, hysteria, paralysis, and convulsions are more common among persons of this type and their children than among the general population. It is a well-known fact that in certain cases of this type, acute rheumatism, for instance, will attack the brain and cord, producing coma or chorea, and that even the syphilitic poison will by preference attack the neuroglia rather than the joints, in

such neurotic constitutions, and that when such people suffer from fevers they are more apt to be delirious.

The facts of nature compel the physician to see that purely mental qualities and mental defects are transmissible from parent to child, and prepare him for the great part that heredity plays in psychological development and in mental disease. It has not yet been proved statistically whether the shape of a man's nose or the acuteness of his moral sense is most apt to be transmitted to his children or grandchildren, but I am strongly of opinion that the latter would be found to be so.

The medico-psychological student finds that in addition to the influence of temperament, diathesis, and heredity, the working of mind in each individual is influenced daily by other organs than the brain. He finds the so-called animal and organic functions and propensities so interwoven with the purely mental functions, such inter-action and re-action between them all, that he instinctively forms the conclusion and acts on it, that he must look on the whole man—body, mind, and spirit—from the point of view of an organism whose whole needs and capacities exhibit unity and solidarity throughout. Take, for instance, the function of alimentation. No doubt the mastication, swallowing, digestion, and absorption are chiefly mechanical and chemical processes, performed in a living laboratory, and take place in the nerveless *amœba*, but he would be but a blind and narrow-sighted observer who failed to see the enormous mental and moral influence that the desire for food, the appetite for food, and the varied pleasures, organic and conscious, that suitable food produces. He would soon in his practice meet with cases where in a rational man a badly-cooked dinner made his life not worth having to himself, and a torment to those about him. And a wider view would show that different kinds of foods affected the mental development of whole races of men; that the desire to get certain coveted foods stimulated the highest ingenuity and thinking power of the wisest of men, while the want or poverty of food had made civilized men into wild beasts, as during the French Revolution, or among shipwrecked sailors. The absolute dependence of the appetite for food on brain and ganglionic integrity and sound working is so often seen by physicians, that they need no physiological proof that the appetite is a brain function. What stops the appetite at once when sudden fear or joy is felt? Through what organ is it perverted during pregnancy or in hysteria? What stimulates it to ravenousness in diabetes, if it is not a brain function?

Take a function still more nearly affecting mentalization, that of the reproduction of the species. What practical student of mind can disregard it? What physician can overlook the part it plays? How directly it influences the whole affective life and history of mankind! How the ascetic religionists of all creeds, with ideal *a priori* standards of life before them, have striven to set themselves

free from its influence on their minds and lives! What attempts have been made to degrade it into something almost criminal and brutish in one age, to ignore it in the next, and to idealize it in the next! The psychological physician must simply accept the facts of physiology, and regard man as a whole, mind and body. So regarding him, he is every day beset with problems that imply consideration of the reproductive functions of the human species, and their effects direct and indirect on the minds of his patients. And the sooner he begins to regard the whole matter from the physiological and professional point of view, just as the obstetrician does his work, the better for himself and his patients. It will often need all his physiological knowledge and his psychological study, combined with his common sense and general knowledge of human nature, to expiscate the mental sympathies and aversions, the reflex and sympathetic irritations, and the paralyzed volitions of his pubescent, hysterical, puerperal, celibate, and climacteric patients.

A knowledge of the enormous variety of mental types seen in nature will effectually prevent the physician from setting up a Utopian and false ideal standard with which to compare deranged mind when he comes to study that subject. It is of the utmost practical importance that it should be so. Those students who attend the clinical lectures will find that there are few questions I shall so often ask as this, "What sort of man was this when he was reckoned well in mind?" "How does he now differ from his state then?" "Are his present mental peculiarities evolutions of his temperament?" "Are they connected with his diathesis?" "Do they bear relation to any disturbance of the great functions of the body?" "What bodily functions are disordered along with the mental?" "Are there any purely bodily symptoms present?" "Was the onset of the mental disease connected with any functional evolution such as puberty, with any ordinary physiological process such as menstruation, or with any extraordinary physiological cataclasm such as childbirth?" "Are any of the other great functions of the nervous centres, such as motion or sensibility, impaired? And if so, whether primarily or secondarily to the disordered mentalization?" This is the clinical mode of studying mental disease, founded on a physiological basis. It implies something far more than merely classifying the mental symptoms of your patients, and ticketing the various groups with a name. You can easily imagine the same mental symptoms to exist, and, as a matter of fact, they very often do exist, in a girl of 15 entering on puberty and in a puerperal woman, but in the latter case the bodily symptoms would be quite different from the former, the temperature perhaps being 103° , the lochia absent, the tongue dry, the pulse feeble, the uterus septic and irritated, and the general condition so weak that a few more steps downward would lead to death; while in the former the strength would be good, the pulse good, and the temperature almost normal. Both cases looked at from the point

of view of mental symptoms would be called acute mania, and yet they would be quite different in etiology, in bodily symptoms, in prognosis, and in treatment.

The proper point from which to start in studying diseased mentalization being the normal physiological energy of the brain, and a recognition of the fact that the normal type is not a fixed point or line, but a wide area with far diverging promontories according to age, sex, race, education, period of life, heredity, diathesis, and temperament, we next come to the question of how far mere temporary causes, such as changes in the blood-supply, excesses of work, strains of all kinds, or reflex irritations, affect the mental energy of the brain, but still keep within a line that may be and ought to be reckoned physiological. If a man works till he cannot any longer lift his arm, we do not call it paralysis; if he sleeps so soundly afterwards that no ordinary stimuli will awake him, we do not call it coma: we place neither condition out of the physiological into the pathological state. So, if a man's heart is made glad by wine or by extraordinary good news, and he shows many signs of mental exaltation unusual in him, or if he loses blood or has bad news, and is profoundly depressed, we still call those states physiological, and do not count them pathological mentalization at all. A man's power of judging and comparing his emotional condition, his inhibitory power, may all be so far paralyzed as to be in abeyance for the time, and yet we count him perfectly free from mental disease. Nay, I have seen two men in exactly the same condition for the time being, so far as mental symptoms were concerned, and I counted the one sane and the other insane. When the limits of the physiological are passed, and a man enters on a pathological state of mind, we are often utterly unable to tell the exact line where the one ends and the other begins. As Maudsley says, you might as well attempt to draw the line between light and darkness. There is no Rubicon over which a man passes from the one into the other. Insanity does not enter into a man at one door, while sanity departs at the other. This fact you should never forget, any more than the fact (to take one of the most definite ascertainable physical conditions of the human body) that you can never tell where a normal temperature ends and an abnormal one begins. You know that 98° is within the limits of normal physiological heat. You know that 108° is abnormal and pathological, but you cannot tell at what point health passed into disease.

For the study of mental disorders while the general state of mind must be the same as that in which we study ordinary bodily diseases, while it is essentially the clinical faculties that we put into exercise, yet there needs to be superadded a different kind of design and conscious effort to find out what the morbid symptoms are, more of comparison with health, more scepticism as to what the patient says directly about his own symptoms, and far more strain in the effort to draw out the patient into a veracious

and open state of mind. The constant effort to interpret the clinical meanings of subtle changes in your patient's manner, and the significance of what he says and how he says it, is wearying; while the difficulties of delicately leading him over the ground where his mental deficiencies exist are often excessively great. His every word and act must be closely scrutinized, for they form part of the symptoms on which your diagnosis rests. An initial difficulty with the uninstructed is in the want of terms to express the mental symptoms. I have seen a man try to describe the symptoms of an ordinary case of acute delirious mania to me, and utterly fail to give any connected idea of the patient's state. Such a description as this I have often got: "He won't do anything you tell him. I can't make anything of him. He talks a lot of nonsense. He's just mad."

Though our nomenclature for the deviations from normal mentalization is as yet unscientific and incomplete, and must one of these days be revised, yet most abnormalities are capable of being in some way described or indicated. The common symptoms met with have been classified, and form the first classification of mental diseases to which I shall direct your attention. It is in reality only a classification of symptoms, not of real diseases, but the symptoms are most important and are the first things to be observed. The nomenclature this classification gives us is quite essential for our study of disordered mind, and its terms have become current in medicine, jurisprudence, and general literature. Pinel and Esquirol's original classification of mental diseases on this principle has undergone many modifications and extensions, and I, like my predecessors, have introduced some changes. The principles on which it is founded are, to take one example, that all the states of morbid mental depression are classed under one head, Melancholia, just as all the painful disorders of sensibility are called Neuralgia. Indeed the Melancholias bear a close analogy to the Neuralgias. In the one case the mental functions of the brain are affected, in the other the common sensibility. Most cases of melancholia might be called cases of mental pain. Instead of Neuralgia it might be more scientifically called Psychalgia.

Then all the states of morbid mental exaltation and excitement are classed together and called Mania, just as all the motor storms and explosions are called convulsions, eclampsias, or spasms. A typical case of mania may be considered like a mental chorea or eclampsia. There is present disordered, incoherent, involuntary, purposeless mentalization. Mania might be called Psychlampsia, if we wanted to set up a more uniform nomenclature than we have at present.

There are other cases whose symptoms consist of regularly alternating states of depression and exaltation, this rhythmical recurrence of mental pain and spasm going on during the whole course of the disease, and constituting its essential distinctive character. We

nave not yet invented a better name for this than the one given to it by Baillarger, who first described it, viz., *Folie Circulaire*. Though only described as a variety of mania by him, yet I think its characters are so distinctive as to vindicate for it a special place in a complete symptomatological nosology, where I have accordingly placed it.

The fixed delusional states without excitement or depression come next, the *Monomanias*. Just as we now separate the monospasms and the local convulsions from the general eclampsias, I think it is better to place the cases of monomania by themselves, instead of calling them as some authors do partial mania. It is analogous to a paræsthesia, being in fact very often due to a want of correspondence or co-ordination between the impression sent up to the brain from the special senses and the real objective impressions on the senses; the impressions get distorted on their way from the organs of sense to the convolutions. For instance, if a man hears distinct articulated words which are merely the moanings of the wind to others, and if those subjective false voices call him bad names, he becomes suspicious of the people about him; this becomes a morbid habit of his mind, without any special excitement or depression, and we say he labours under monomania of suspicion. This is one way in which a delusion may arise. A true impression from a nerve of common sensibility may be misinterpreted, as when a man has really cancer of his stomach that causes him intense gnawing pain, and he believes he has rats inside him that are eating his vitals. It might help you to understand this condition better if it were called Monopsychosis.

When the morbid condition is one of mental enfeeblement it is called Dementia or Amentia, both very good terms. The conditions they represent are strictly analogous to the anæsthesias, pareses, and partial paralyses that result when the sensory and motor centres of the brain are respectively diseased. It might be called Pyschoparesis.

The next on the list I have placed there, because it fills up a gap that existed in former classifications of mental symptoms. It represents the negation of mentalization resulting from disease, where the patients are insensible to external influences, will not speak, where the faculty of attention appears to be quite gone, and where they appear not to think or feel at all. I can desire no better name than the usual one of Stupor, Amentia being already appropriated to Idiocy—which, by the way, is never really mindlessness as the name would imply. Psychocoma or Psychoparalysis would express the condition.

Inasmuch as physiology has clearly demonstrated the existence of centres in the nervous system that control other nervous centres, giving the name of inhibition to the function of the former, and as we find that there are certain cases of mental disease, where an

analogous function of the higher ideo-motor nerve centres seems to be deranged, where there are, in fact, states of want of inhibitory mental power without marked depression, exaltation, or enfeeblement, I have put those under a special class of states of defective mental inhibition. This might be called, for the sake of keeping up a scientific correspondence in the nomenclature, Psychokinesia.

Lastly, there is a mental state graphically described by Dr Maudsley, and which certainly represents facts in nature, the insane temperament or neurosis insana, or, to keep up uniformity of the classification, Psychoneurosis. This consists more of potentialities of psychosis, or extraordinary and unusual assortment of mental faculties, states of feeling that are extraordinary and uncommon, and courses of conduct that seem merely automatic, and incapable of volitional regulation—all these things being the result of a hereditary neurosis, and a brain whose various functions and parts are unconformable, or whose dynamical constitution is unstable and eccentric. The following is the symptomatological classification I shall use with the chief varieties of each form:—

1. States of Mental Depression (*Melancholia, Psychalgia*):—
a. Simple Melancholia. *b.* Hypochondriacal Melancholia. *c.* Delusional Melancholia. *d.* Excited Melancholia. *e.* Suicidal and Homicidal Melancholia.

2. States of Mental Exaltation (*Mania, Psychlampsia*):—
a. Simple Mania (*Folie Raisonnable*). *b.* Acute Mania. *c.* Delusional Mania. *d.* Chronic Mania.

3. States of Regularly Alternating Depression and Exaltation (*Folie Circulaire, Psychorythm, Folie à Double Forme, Circular Insanity, Periodic Mania, Recurrent Mania*).

4. States of Fixed and Limited Delusion (*Monomania, Monopsychosis*):—*a.* Monomania of Pride and Grandeur. *b.* Monomania of Unseen Agency. *c.* Monomania of Suspicion.

5. States of Mental Enfeeblement (*Dementia, Amentia, Psychoparesis, Congenital Imbecility, Idiocy*):—*a.* Secondary (Ordinary) Dementia (*following Mania and Melancholia*). *b.* Primary Enfeeblement (Imbecility, Idiocy, Cretinism, *the result of deficient Brain development, or of Brain Disease in very early life*). *c.* Senile Dementia. *d.* Organic Dementia (*the result of Organic Brain Disease*).

6. States of Mental Stupor (*Stupor, Psychocoma*):—*a.* Melancholic Stupor, “Melancholia attonita.” *b.* Anergic Stupor, “Primary Dementia,” “Dementia attonita.” *c.* Secondary Stupor (*transitory after Acute Mania*).

7. States of Defective Inhibition (*Psychokinesia, Hyperkinesia, Impulsive Insanity, Volitional Insanity, Uncontrollable Impulse, Insanity without Delusion*):—*a.* Homicidal Impulse. *b.* Suicidal Impulse. *c.* Epileptiform Impulse. *d.* Animal Impulse. *e.* Dipsomania. *f.* Pyromania. *g.* Kleptomania. *h.* Moral Insanity.

8. The Insane Diathesis (*Psychoneurosis, Neurosis Insana, Neurosis Spasmodica*).

All these varieties of mental disease find their origin and flow out of excess, defects, and irregularities in the physiological functions of the brain. They may all arise from innate morbid tendencies in the organ, or from eccentric causes within or without the organism. The brain responds by thought, by sympathy, by instinctive and reflex influences to almost everything in the universe outside it, and to every tissue, organ, and energy within the organism, and no two brains are alike in their reactions. If its constitution is unsound therefore, or if its conditions of energizing are unphysiological, the causes are innumerable various without and within for aberration and derangement, and the particular symptoms are almost as various as the causes of mental disease. More than any other, it may be said that no one ever saw two cases precisely alike. This or any other classification, therefore, only represents types and genera, not species.

Such was until recently the usual mode of studying and classifying mental diseases. It assumes that the mental symptoms are the chief things about the disease to be observed. The late Dr Skae devised, extended, and directed special attention to another mode of studying mental disease, which we may call the clinical method. It endeavours to take account of causes, and the relationship the varieties of the disease have to the great physiological periods of life, and the activities of the body other than the mental—in other words, the whole *natural history* of the diseases. I shall best show you what I mean by relating shortly the result of an investigation I have just been making as to the effects of the first appearance and development of the reproductive function on mental disease. I have taken this because the facts connected with it are in some respects very definite, and its influence on normal mentalization is confessedly most profound. At one period of life this function does not exist, at another period it does, and then, at least in one sex, it ceases to exist.

Most authorities are agreed that the average age at which the function is first evolved is about fourteen years, and Dr Matthews Duncan has proved statistically that in the female sex “the climax of initial fecundity which may be taken as proof of full development is about the age of twenty-five years.”¹ This may be assumed to be the case for both sexes.

This whole period of twelve years from the first evolution up to the full perfection of the reproductive energy may be regarded as the physiological period of *adolescence*. Looked at from a psychological point of view it cannot be denied by any one that the latter years of adolescence are far more important than the first. For years after puberty boys and girls are still boys and girls in mind, but as a physiological fact the female sex attains its full bodily development first. At twenty-one the great majority of that sex have attained perfect physiological development, and Duncan’s

¹ *Fecundity, Fertility, and Sterility*, 2d ed. p. 33.

statistics show that their initial fecundity is then almost at its climax. But this is not so in the male sex. The growth of the beard and the form of the body do not reach full development in that sex on an average till the age of twenty-five. Mentally the difference is still more marked, I believe. The subtle but profound mental influences of adolescence have usually reached their full maturity in women three or four years before men. This is not capable of scientific testing or statistical proof, but I believe it is the general experience that the taste for and capacity fully to appreciate and enjoy the higher kind of literature that appeals to the feelings, and the enjoyment of which implies a full and rounded emotional development, is found earlier in the female sex than the male. There are, of course, very frequent exceptions to those general rules, but for scientific purposes we must take the averages.

For this inquiry I took for the period of five years and a quarter (from 1874 till the end of the first quarter of 1879) all the cases that were admitted into the Royal Edinburgh Asylum. They amounted to 1796—917 men and 879 women. Of these 320 were between the ages of 14 and 25, viz., 195 males and 125 females. Now, if my object had merely been to arrange those 320 patients each in a classification of symptoms, it would have been simple enough: so many with exaltation under Mania, so many with depression under Melancholia, etc. That must be done, but a great deal of more information must be expiscated about each case if we are to arrange them in clinical or physiological groups, and especially if we are to have any light thrown on the question, "Did adolescence influence the mental symptoms present in those cases?" We must ask and answer the following inquiries: "In how many cases did the disease exist before the age of 14, or was of a kind with which adolescence could have nothing to do?" I found I had to deduct 90 such cases, or about one-third of the 320 who had been mentally defective or epileptic from birth, or very early ages, or laboured under organic disease, or in whom the disease came on in nursing or childbirth, leaving 230 in whom it was possible for adolescence to cause or influence the disease.

The next inquiry naturally was, "If 230 occurred in the 12 years between the ages of 14 and 25, is that number greater or less than is found in the same number of years at other ages?" I find it to be far more than between 2 and 14, but far less (10 per cent.) than between 30 and 40. At this particular age, either from adolescence or some other cause, it is clear that there arises a liability to insanity which did not before exist, but which does not cease when adolescence is past.

The next query was this: "Taking this long period of twelve years, is there any special liability during any of the years of that time?" "Does it arise at puberty, or towards the completion of the period of adolescence?" A glance at the numbers who became insane in each of the twelve years shows that the first two, that is

the 14th and 15th, were especially exempt, only producing one case each, and the next two, the 16th and 17th, also very few (22). Now, the fact that there only occurred in those four years of life 24 cases out of about 1800 in all (230 of them being adolescents), does show clearly that the first onset of the reproductive function is not a dangerous one as regards liability to insanity.

The next three—the 18th, 19th, and 20th—are still low, producing only 49 cases, or an average of 16 in each year. In those three years, while puberty has occurred in nearly every individual of both sexes, yet adolescence has not been completed in many of them.

It was in the next five years, from the 21st to the 25th, that the vast majority of the cases occurred, viz., 157 of the 230, or an average of 31 in each year as compared with an average of 8 for each of the first five years. At 14 the liability to insanity was practically *nil*, from 21 to 25 it is seen to be very great. In fact, a comparison with the liability at other ages during the past five years in the admissions to the asylum shows that there is no period of life where uncomplicated insanity occurs more frequently than during the completion of the physiological era of adolescence, from 21 to 25. It must be kept in mind that I am not now speaking of the numbers becoming insane in proportion to the number of the general population alive at any particular period.

Comparing the two sexes, the total numbers and relative proportion of females are smaller in the adolescent period than at later periods of life. Adolescence does not appear to be so powerful an upsetter of mental equilibrium in women as in men.

Having elucidated those points, we come to the question, as to what mental symptoms these adolescents suffered from, and if those symptoms were in any way peculiar? While investigating this I found the complications of marriage, childbearing, and lactation in the females so common after the age of 21, that it was difficult to compare them with the males. I therefore made 21 the limit of age for them. This reduced their numbers to 40, making with the 140 males 180.

The first fact of importance is, that there were only 40 cases where the symptoms present were classed as states of mental depression or melancholia, while the rest were cases of exaltation or mania. Now the significance of this proportion is only seen by comparison. During the past five years in the Asylum there have been admitted two cases of uncomplicated mania to one of melancholia (849 to 439), whereas among the adolescents it was $3\frac{1}{2}$ to 1 (140 to 40). And if we compare them with the cases that occurred in women at the climacteric period, 199 in number, those of mania only numbered $1\frac{1}{2}$ to one of melancholia (112 to 87).

The proportion of states of exaltation of mind or mania, therefore, is enormously greater as compared with those of melancholia among the adolescent insane than among the insane at all ages,

this excess being still more marked when compared with the cases of mental disease occurring at the climacteric period of life.

The next inquiry was, "What was the character of the mania?" I found it had several well-marked characteristics. It was, in the first place, often of a very acute, though seldom of a delirious type; in the second place, it was mostly of short duration, the patients getting soon apparently quite well, but having constant relapses after a few weeks. Out of the 180 cases, 118, or 66 per cent., had such intermissions of sanity with subsequent relapses. This tendency to short, sharp attacks with intermissions of more perfect sanity than occurs in almost any other kind of mental disease, with relapses occurring one, two, three, four, and five times before complete recovery or dementia finally takes place, may be taken to be very characteristic of this "Insanity of Adolescence," as it may be called, for you see it was not an insanity of puberty, except in a very few cases indeed. In many of them, as the maniacal attacks passed off, there was a slight tendency to melancholia, a sort of reaction of the brain in fact. This was present in 62 cases.

Another rather well-marked characteristic was this, that a hereditary predisposition to mental disease, or at least to some of the neuroses, was present in 77 of the 180, or in 45 per cent. of the whole number. It is very difficult to get family histories of insanity in most cases, and you may multiply by two those you get if you want the truth. This is best shown by the fact, that of the 1580 cases admitted to the Asylum during the five years 1873-77, only 308 were put down as hereditary. This is only 20 per cent. as compared with the 45 per cent. among the adolescents, in whose cases no special pains had been taken to ascertain family history. A still more striking fact I discovered in regard to the heredity of the insanity of adolescents. I happened to have a personal knowledge of the history of the cases and of the families in 15 of the cases, and in 12 of these there was a hereditary predisposition to the neurosis. The insanity of adolescents is therefore predisposed to in most cases by a nervous heredity.

Another marked character of the mania was that the ideas, emotions, speech, and conduct, were all very strongly tinged by the mental characteristics of adolescence in an exaggerated or morbid way. That perversion of the reproductive nîsus, the habit of masturbation, was very common, probably existing in over 50 per cent. of the cases, aggravating the symptoms, and diminishing the chances of recovery. In the females hysterical symptoms were very common, such as mock modesty, simulated pains, and a desire to attract attention. In the males heroic notions, an imitation of manly airs and manners, an obtrusive pugnaciousness and sometimes a morbid sentimentality were present. In almost all the cases the physical appearance of the males was boyish when the attack commenced, and most of the young women were girlish rather than womanly in contour.

As regards the results of treatment in those cases, 93 were discharged recovered, or 51 per cent, but then 40 were removed home or to other institutions relieved, many of whom, I know, would have been likely to recover ultimately. I only know of 26 of the 180 who became incurable. Insanity occurring at the adolescent period is therefore a very curable disorder, as compared with many other forms, though not so curable as some others, *e.g.*, puerperal insanity, where 80 per cent. recover. Just before recovery in almost all the cases which did get better, signs of physiological manhood appeared, the beard growing, the form expanding, etc. Whenever I see those signs in such cases accompanied by mental improvement, I am inclined to give a most favourable prognosis. The mortality was extraordinarily low, only three of the 180 cases having died.

The great advantage of looking at a case of insanity not merely from the point of view of its mental symptoms, but in connexion with such a physiological period of life, is, that we come to know far more about it, and it has more interest. Such a view helps to form our prognosis, and guides us in our treatment and management. Just because those cases are connected with adolescence, I now never give them stimulants or stimulating food, using plentifully such foods as milk and cod-liver oil. I try and make them live as much as possible in the open air, and take much muscular exercise. I try to fatten them by easy means without stimulation, knowing that the completion of normal adolescence in both sexes should be characterized by a good amount of adipose tissue over the body. Under this treatment and regimen I think that more of them recover and fewer sink into dementia, than when no attention was paid to the clinical grouping of such cases or their physiological aspects, and they were simply called cases of acute mania. I think, indeed, that to the practising physician it is of the utmost importance to find out which clinical group his cases belong to.

Some kinds of insanity we can group as pathological varieties of disease; after death we can demonstrate the changes in the brain tissue, and distinctly connect them with the mental symptoms during life as in general paralysis and marked cases of senile dementia, etc.

The following are the chief varieties of insanity according to the clinical classification:—

1. General Paralysis.
2. Paralytic Insanity (*Organic Dementia*).
3. Epileptic Insanity.
4. Syphilitic Insanity.
5. Alcoholic (and Toxic) Insanity.
6. Rheumatic, Choreic, and Gouty Insanity.
7. Phthisical Insanity.
8. Puerperal Insanity.
9. Lactational Insanity.
10. Insanity of Pregnancy.
11. Insanity of Masturbation.
12. Uterine and Ovarian Insanity.
13. Hysterical Insanity.
14. Congenital Insanity.
15. Pubescent and Adolescent Insanity.
16. Climacteric Insanity.
17. Senile Insanity.

ARTICLE II.—*Sudden Death from Aneurism by Rupture.* By
EDWARD HENDERSON, M.D., F.R.C.S. Edin.

(Concluded from page 1099, vol. xxiv.)

CASE VIII.—On the morning of the 25th of July 1876, I was sent for by the police to view the body of a man who had died suddenly. He had been to my knowledge intemperate—a spirit drinker—for many years. He was excessively obese, and suffered from a nearly incurable ulceration of the leg, connected with varicose veins, and also possibly an old specific taint. He had died suddenly and quietly while seated in his chair—apparently, his friends said, in a faint. I said on my way to the house that it was probably a death from fatty heart, but on seeing the body I altered my opinion. The face and mucous membrane of the mouth and lips were absolutely bloodless. He was seated in a chair, his feet resting on the guard of a stove, in an easy attitude, just as he had died. I now hazarded the opinion that death had resulted from the rupture of a thoracic aneurism, and that the blood would be found in quantity in the pleura. Assisted by Dr Johnston, I made an examination of the body in the afternoon of the same day, the weather being then very warm. We found two pounds of blood-clot in the left pleura, with a quantity of serum. The aneurism, from which this had escaped, was of considerable size. It was situated on the descending aorta, and the rent in it was large. There was ulceration of the bodies of two vertebræ, against which the tumour rested, and to which it was closely adherent.

With this last death—although it by no means completes my experience of aneurism in Shanghai—I shall conclude my recital of cases, and proceed now to indicate briefly what I regard as the points of chief interest in these narratives. It is not right that in a Society such as this I should occupy much time with the literature of my subject, and yet I can scarcely regard the task I have undertaken as completed without some reference to the recorded experience of others. An enumeration of the hollow organs and spaces in the thorax, gives, of course, the various receptacles which can receive the blood from a thoracic aneurism rupturing internally, and such an enumeration will be found, given in this connexion, in at least one systematic work on practice of physic. From my own experience I have come naturally to regard the pericardium and pleuræ as receiving most commonly the effused blood; of the two pleuræ, the left seems to be the one usually implicated; and these generalizations, although on account of the limited data without due warrant, appear to be confirmed by Crisp's statistics. I am in doubt as to whether sudden death by rupture should or should not be regarded as the most common termination of cases of thoracic aneurism. Niemeyer speaks of this accident as occurring

"often." Roberts gives rupture the third place among the various modes of termination of this disease—gradual asthenia being placed first, and effects of pressure second—but the arrangement may possibly not be intended to express the relative frequency of occurrence. Walsh gives it as his opinion that broncho-tracheal pressure and irritation rank among the most frequent "causes of death in thoracic aneurism," and I gather from the rest of his remarks on this subject that he regards rupture as a common accident. An analysis of the tables framed by Crisp would lead one to suppose that, in thoracic aneurism at least, rupture is a very common, if not the most common, cause of death.

Sir Thomas Watson notices specially the three modes of rupture which my cases illustrate. He speaks of aneurism at the very entrance of the aorta as often defying detection, and adds, "All at once the patient drops down dead; and upon searching for the cause of this sudden extinction of life, you find the pericardium distended with blood, and the source of that blood you find to be the aneurismal pouch so near the root of the aorta as to project within the pericardium." In another page he writes, "the blood not unfrequently bursts into the sac of one or other pleuræ." When he refers to rupture into the larynx, he speaks of the patient as "overwhelmed by a torrent of blood into and from his lungs, and perishing in a few seconds." This last mode of death, illustrated by my second case, is an accident of a most appalling kind, and likely to make a lasting impression on any one who has witnessed it, or who has viewed the body and its surroundings immediately after death.

Dr Stokes, in his book on diseases of the heart and aorta, describes the termination of a case of thoracic aneurism as follows:—"He, the patient, had occasion to turn on his left side, when, in an instant, a fearful attack of convulsions came on. The pulse disappeared, and after a few spasmodic respirations he was dead. On dissection the whole sac of the pleura was found filled with blood, which had separated into crassamentum and serum. The aneurism had ruptured at the lowest portion of the thoracic aorta. But," he adds, "this sudden and stormy death in aneurism is less often met with than many might suppose, existence being frequently terminated by a slower process, sometimes attended with but little pain, at others by protracted suffering." The experience which I have placed on record to-night may be contrasted with this statement, and "the stormy death ushered in by fearful convulsions," which Dr Stokes witnessed, will be noticed as differing widely from the quick deaths of my three patients, two of whom were seen by me when life was extinct, still seated in easy attitudes in the chairs on which they had so suddenly and so painlessly expired. This point deserves some attention, the mode of death described by Dr Stokes being certainly the one most in accordance with the teachings of physiology. So-called anæmic convulsions

are apparently the natural sequence of sudden and large losses of blood, the medulla, with its convulsive centre, being, to quote from Foster's text-book, "stimulated by lack of arterial blood." Elsewhere in the same book, Dr Stokes observes, "that, if the aneurism burst into a serous sac, or into a free canal, such as the œsophagus, fatal syncope may be the result." He does not specially notice rupture into the pericardium, save to draw attention to a case in which death was by gradual sinking; partial adhesions, probably of long standing, limiting the outflow of the blood. In one of my cases (Case VI.), it may be remembered, the escape of blood was limited by the minute size of the perforation, the patient sinking gradually, and dying painlessly, some eleven or twelve hours after the effusion had apparently first commenced.

The lividity of the face, in the two cases where sudden death resulted from rupture into the pericardium, contrasted, as I have shown, strikingly, with the extreme wax-like pallor which characterized the cases of rupture into the pleura, and it is probable that these will be found constant post-mortem appearances when the blood escapes from a rent, rather than a perforation, in the sac. In Wilkes and Moxon's work on pathological anatomy there is one passage so peculiarly appropriate, that in justice to these authors I must quote it in full. Writing on rupture into the pericardium, they say:—"The loss of blood is not much, and therefore the body is not blanched, as is so often the case from ruptured aneurism elsewhere; for in this case death arises from mechanical interference with the heart's action, and the blood is prevented from flowing from distant parts, and therefore you meet the apparent anomaly that death has been caused by a ruptured bloodvessel, and yet the tissues are found congested." I have not found anything so much to my point as this in any other of the books I have consulted. Yet "tissues" is a general term, and scarcely indicates, though it doubtless comprehends, that peculiar face congestion which I have observed to be so distinctive an appearance after death. I have sought in vain in works on forensic medicine for any case which can be regarded as fairly parallel to the one with which I began my paper. Woodman and Tidey record a death from aneurism rupturing into the left pleura, sworn to as due to previous disease (atheroma), and so, by inference of the Court, *not* due to an assault alleged to have been committed six weeks previously. Here, however, the point raised is not, as in my case, the priority of two lesions, each sufficient of itself to terminate life, but merely the effect which violence might have in accelerating the progress of a disease which was tending naturally to a fatal issue.

There is much that is important as well as interesting to be said regarding the etiology of aneurism, especially, I think, regarding the etiology of such cases as those I have just laid before you—the sufferers being all young men, or men in the prime of life, who had, moreover, with perhaps two exceptions, been subjected to no

special strains save those incidental to the outdoor sports commonly indulged in by Englishmen. I am, however, well aware that any profitable discussion of my cases in this direction needs for its foundation detailed and accurate pathological data, which I am unfortunately unable to furnish. It is certainly possible that each admits of a different explanation, and that the localization and rapid succession, ought, after all, to be regarded only as coincidences—curious it may be, but still in no way significant. Perhaps, however, on more general grounds, and in the hope of eliciting the opinions of others, rather than with the intention of expressing any decided views myself, I may be permitted to suggest one or two considerations of importance.

In three of the eight cases which I have recorded I had a distinct history of syphilis, while in two others I had good reason to suspect the previous existence of this disease. In view of these facts, and guided by the recorded experience and opinions of some of our best authorities on the subject, I was at first led naturally to regard syphilis as at least an important predisposing cause. On this point Roberts writes decidedly: "The diseases which predispose to changes in the vessels, such as syphilis, gout, and rheumatism may be considered as predisposing causes of aneurism, especially syphilis." "Predisposing cause" is however a vague, and to my mind unsatisfactory, term—something more being, I think, needed than a mere previous, or even coincident, history of syphilis, before we can admit that disease to be, as Roberts expresses it, "especially" predisposing to the occurrence of aneurism. The number of men and women who suffer from syphilis is very great; few possibly, save those who are connected with the public service, or who have made the subject a special study, perfectly realize *how* great. Yet the number of cases of aneurism is comparatively very small, and of that comparatively small number only a part have a previous history of syphilis, while of that part only a very small portion have a coincident history of the disease. Of course the distinct recognition of definite syphilitic lesions, which could, moreover, be shown to have a tendency to weaken the arterial walls, would set the matter at rest. It is, however, doubtful whether any such have ever been observed; it is certain that if they have been seen, it has only been by one or two observers, and very rarely by these. It is, I believe, an established fact that prostitutes do not suffer at all exceptionally from aneurism; and considering their manner of life, this can scarcely be explained on the ground, that being women, they are less subject to strains, and therefore less likely to develop the disease than men. The peculiar form of arteritis which modern pathology connects with syphilis belongs to the smaller vessels, and is essentially a thickening of the intima with diminution of the lumen. Lancereaux while recognising this peculiar lesion, still gives aneurism as a mode of termination of what he terms arterial syphilis; in support of his

opinion he cites several cases, one being, I think, rather unfortunately selected on the ground that the condition was ameliorated by the use of iodide of potassium. Wilks and Moxon write as follows:—"Several observers, especially those connected with the army, have concluded that syphilis is a common cause of disease of the aorta. The descriptions given by them, however, do not serve to distinguish their cases from the forms of inflammation of the aorta above described (non-specific), and we have not been successful in distinctly tracing these states to syphilis." Again: "The determining cause of the occurrence of this change (atheroma) is mechanical strain. This by no means interferes with any belief that a general altered nutrition, as gout, syphilis, etc., may lay the coats of vessels more open to suffer from the said strain. And we are disposed to think that it is probably true that they do so, but no one has yet shown this to be true." Walsh also writes on this point guardedly. He says, "The syphilitic cachexia and gouty diathesis are said to have some connexion with aneurism. As far as my own observation goes, it supports the notion that in the tertiary and ultimate developments, syphilis may lay the groundwork of aneurism, as it apparently does of valvular disease also, so that a certain attraction might be held to exist between the two affections; but I have no satisfactory statistical evidence to adduce."

The fatty changes induced by the excessive use of alcoholic stimulants being universally admitted, one turns naturally to these as a principal cause of early degeneration of the arterial walls. Atheromatous arteries may be a so-to-speak natural, or at least customary, condition in the aged, but assuredly must be due to some peculiarity, inherited or acquired, when found in the bodies of young men. I have noted this condition specially in three of my cases, and regret that I either neglected to do this in the others, or altogether omitted to make it a point for special investigation. I have the impression that the condition was present in a greater or less degree in all. In this connexion it would be interesting to know what effect a high temperature—hot weather, such as we experience for eight months of the year in Shanghai—has on the elimination of alcohol from the system; for it seems only reasonable to suppose that the longer the alcohol remains in the body, the more marked will be its effect on the tissues. I am, however, not aware that anything definite has yet been written on the subject. My experience in practice abroad has at least taught me that alcoholic excess is followed by much more serious and more prolonged after consequences (to the digestive and nervous systems), during the tropical heat of summer than during the cold of winter, or even the more moderate heat of early spring and late autumn. It should, however, be borne in mind that tissue changes, such as those under discussion, are produced rather by the steady daily digestion of quantities of liquor insufficient to produce positive intoxication, than by occasional, or even periodical excesses.

Positive intoxication is as rarely seen in Shanghai as it is at home among men of the same class; but I have the impression that alcoholic stimulants enter more regularly, and possibly more largely, into the daily dietary of young men in the East than they do at home. Tropical heat, with the excessive drain of perspiration it induces, causes feelings of exhaustion which are readily relieved by alcohol, and many doubtless find it difficult or impossible to resist the temptation to have recourse to it, even although the relief obtained be but temporary, and followed sooner or later by increased depression. It used to be a popular belief in Shanghai that stimulants might be dispensed with at home, but were essential for the preservation of health abroad. I trust, however, that the practice of the last generation of Shanghai doctors, and the plain teaching of the periodical literature of the day, has done much to correct so serious an error.

The ages of my patients are worth recalling; they are, 25, 26, 29, 30, 31, 36, 37, and 45. Although I have already spoken of the early development of aneurism as suggesting pathological considerations of importance, I am inclined to think that my experience as to age ought not to be regarded as exceptional from a general point of view. The disease is rare before 20, but after that age, and especially between 30 and 40, it is of frequent occurrence. It is, in fact, most commonly developed at the middle period of life—a period which, however, varies within rather wide limits, according to the individual's position in the social scale. In the middle class, to which my patients, with two exceptions, belonged, middle life can perhaps scarcely be considered as entered on before 35, and of my patients, four (out of the six) were well under that age. This is, however, the period of middle life in England; it remains to be seen whether it ought also to be regarded as the period of middle life abroad. It must, I fear, be admitted that premature old age frequently overtakes those of our countrymen who make the East their homes, be the cause what it may; and it is certainly possible that tissue changes may be already advanced in the arteries, while as yet they are but little apparent in the muscular system, or in the skin and its appendages.

I note Crisp's expression of opinion that aneurism is more frequent in England than in any other country, and his views with regard to temperature (tropical heat), which he thinks has probably but little influence in the production of the disease.

ARTICLE III.—*On the Operation for Stone in the Female Bladder.* By ALEX. OGSTON, M.D., Surgeon to the Aberdeen Royal Infirmary.

SIMON, of Heidelberg,¹ has made dilatation of the female urethra a proceeding applicable with scientific accuracy. The urethra can

¹ Volkmann's *Sammlung Klinischer Vorträge*, No. 88, 1875.

be dilated to a diameter of 1·9 to 2 centimetres or $\frac{3}{4}$ inch, in women over twenty years of age; to 1·8 centimetres or rather more than $\frac{1}{2}$ inch in those between 15 to 20; and to 1·5 centimetres or $\frac{5}{8}$ inch in those between 5 and 11. Under twenty years of age these measurements may, in case of need, be exceeded by 2 or 3 millimetres, that is $\frac{1}{8}$ inch. In no case does incontinence of urine result.

Simon's statements have now been verified by general experience. Hence, since the average diameter of a man's right index finger at its thickest point is about $\frac{3}{4}$ inch (1·8 cm.), and of his little finger $\frac{5}{8}$ inch (1·5 cm.), it may be stated that we can safely dilate the adult urethra so as to admit the index finger, and the child's so as to admit the little finger.

These facts bear on the removal of stone from the female bladder, and allow more precise rules regarding it to be laid down. Cutting for stone will, in future, be rarely if ever used, being reserved for the rare instances where the calculus is of great volume, or of hardness so excessive as to preclude crushing.

The most recent work on operating for stone in the female is by Mr Bryant in *The Medico-Chirurgical Transactions* for 1864.¹ He advocates rapid dilatation by Weiss's urethral dilator, and in that way has successfully removed stones of $1\frac{1}{4}$ inches² and 2 inches³ (2·8 cm. and 4·5 cm.) in diameter.

Poland,⁴ Coulson,⁵ Williams,⁶ and Hartshorne⁷ have recorded similar successful results in equally large stones. But experience is far from being unanimously in favour of either rapid dilatation or incision being always reliable, several series of cases resulting in incontinence of urine, blackening the otherwise good results. Personally I have one bad result to record, in a patient of Dr Mitchell of Rayne, who had a uric acid stone, weighing 236 grains, measuring $1\frac{1}{8}$ inches (2·7 cm.) in the largest diameter that bore on the extraction, and 3 inches in smallest circumference.

According to the experience of Bryant and Poland, it was proper to attempt the removal of such a calculus by rapid dilatation and extraction by the forceps, since the joint maximum diameter that had to traverse the urethra, including both the forceps and the stone, was $1\frac{1}{8}$ inch, or, reckoning the most unfavourable grasp, $1\frac{5}{8}$ inches (3·3 cm.) At the time of that operation, June 1877, I had heard of Simon's work, but did not possess his speculadilators. I therefore selected rapid dilatation, and, to avoid the unequal stretching of Weiss's three-bladed dilator, well known to

¹ Vol. xlvii.

² $1\frac{1}{4}$ inches \times 1 inch.

³ 2 in. \times $1\frac{1}{2}$ inches; or $5\frac{1}{4}$ in. \times $4\frac{1}{2}$ in. in circumference; weight, 2 oz. 2 drachms.

⁴ Holmes' *Surgery*, vol. iv. p. 1088; stone $1\frac{1}{2}$ in. or 2 in. including the forceps.

⁵ *Lancet*, 1864, vol. i.; stone size of walnut.

⁶ *Lancet*, 1864, vol. i.; stone size of pigeon's egg.

⁷ *Brit. Med. Jour.*, 1863, vol. ii.; stone 2 in. long, $3\frac{3}{4}$ in. in circumference, weight 10 drachms.

and remarked on by many surgeons, dilatation was accomplished by the rapid successive introduction of rectum bougies after the meatus urinarius had been notched—an almost exact copying of Simon's method.

The urethra was dilated to the diameter of $1\frac{1}{8}$ inch (2 cm.), that is $2\frac{1}{2}$ inches (6.3 cm.) in circumference, and the stone, whose circumference was 3 inches (7.7 cm.), or plus the forceps $3\frac{3}{8}$ inches (82 cm.), was extracted by carefully delivering it with the forceps. That is to say, the urethra was compelled to transmit a body measuring in circumference $3\frac{3}{8}$ inches, instead of the $2\frac{1}{4}$ inches (5.8 cm.) that can, according to Simon, be safely transmitted. Or, to put it otherwise, the diameter to which the urethra was dilated was 1 inch (2.5 cm.) instead of $\frac{3}{4}$ inch (1.8 cm.), as it should have been. That extra quarter of an inch, which Simon declared unsafe, but which, according to others, should have been harmless, decided the fate of our patient. To this day she has incontinence of urine, I am sorry to say. That was the smallest dilatation that I have heard of producing permanent incontinence, and it was the last case that I operated by the old method.

I have since operated on four patients, two with calculi formed upon foreign bodies in the bladder, and two with ordinary calculi. From information gained in these cases it seems to me that it would be wise in future to adopt for calculus in the female some such plan of operation as the following:—

When the patient is under chloroform, placed in the lithotomy position, and the presence of the stone has been confirmed by the sound in the bladder, and its size and form roughly estimated by the bimanual exploration of one hand above the pubes and one or two fingers of the other in the vagina, the urethra should be dilated by Simon's specula-dilators to its full size. Simon effects this by the following steps:—He notches the meatus urinarius at four places by the scissors, one notch $\frac{1}{2}$ centimetre ($\frac{1}{2}$ inch) deep, being at its lower part, and three others $\frac{1}{4}$ centimetre ($\frac{1}{8}$ inch) deep at its upper part. Three notches, each $\frac{1}{2}$ inch in depth, in the meatus urinarius are, however, quite sufficient, one below at the vaginal side, and the other two at such points of the edge as will allow all three to be equi-distant.

Simon's specula should then be introduced, beginning with No. 1, pushing it well home, withdrawing it, and substituting No. 2, and so on till No. 6 is reached for adult females, or No. 5 for children. Each instrument is simply pushed well home, overcoming a little resistance in doing so, and is then at once withdrawn.

The urethra is by this means dilated so as to admit a forefinger in the adult, or the little finger in the child, and no urine has escaped during the dilatation unless intentionally drained off by removing the core which plugs the dilators.

The finger introduced into the bladder recognises the number, shape, and size of the calculi. If large, they are to be dealt with

by the lithotrite; if small, they should be treated as follows:—By the finger they can be brought down to the neck of the bladder, so as to lie beside the upper opening of the dilated urethra. The fore and middle fingers of the left hand introduced into the vagina, with their pulps forward, and resting against the floor of the bladder, easily retain the calculi in that situation, and, by gentle pressure, force them (if their size permits) one by one into the urethra, and along it until they appear at the meatus urinarius, and can be lifted out of it by the finger and thumb of the right hand, or even delivered by the hand in the vagina, without a forceps of any sort being necessary at all.



I have thus delivered from a patient, aged 48, three stones weighing respectively 44, 90, and 103 grains, and having a maximum diameter to pass at right angles to the urethra of $\frac{1}{2}$ inch (1.3 cm.), $\frac{1}{4}$ inch (1.5 cm.), and $\frac{5}{8}$ inch (1.6 cm.) Their longest diameters were $\frac{1}{2}$ inch (2 cm.), $1\frac{1}{8}$ inch (2.6 cm.), and $1\frac{1}{4}$ inch (3.7 cm.) They were, as may be seen from these measurements, rod-shaped; and they consisted of a mixture of carbonate and oxalate of lime and fusible calculus.

In all stones that will safely pass this manœuvre is effectual. It gauges accurately those that require crushing from those that do not; it is quite easy and simple of execution, and should in all cases be tried. When it fails, recourse must be had to the lithotrite, and the stone reduced to fragments. This is done in the ordinary way at the same sitting. the patient being still under chloroform. The finger is then reintroduced, and if any of the

fragments feel still too large to pass the urethra, they should be still further crushed.

When the crushing has been sufficiently done, the largest size of speculum that had been passed is again introduced, and its core withdrawn, allowing a free exit to the urine remaining in the bladder. The vaginal nozzle of a Higginson's syringe is introduced through the speculum into the bladder, and tepid water is thrown in by the syringe. When the nozzle is withdrawn this escapes, carrying with it the *débris* of the calculus, and by repeating the process the bladder may easily be washed clean. Should any fragments refuse to come out through the speculum, it may be removed, and a slender forceps introduced to seize and extract them, or they may be extruded by the fingers in the vagina as already described. A final washing out with 5 per cent. carbolic water completes the operation. The patient suffers for some hours from a straining desire to pass water, and for three or four days at most from incontinence, after which all troubles are at an end, and the bladder speedily loses any irritability.

By crushing and washing I have removed a fusible calculus weighing 285 grains from a patient 69 years of age. She recovered perfectly.

Where a wire or similar foreign body forms the nucleus of the calculus, the course of the operation is somewhat different. The case is usually mistaken for a common calculus, since the sound gives no hint of the difference, unless the occasional occurrence of incontinence give rise to the suspicion of an unusual foreign body. Calculus alone seldom causes incontinence. Wires and similar foreign bodies more frequently do so. This is because they usually lie transversely in the bladder, with their points towards the acetabula, and often have their ends penetrating, embedded in, or even perforating the bladder. At their embedded ends they give rise to a patch of induration, which serves as a protection against the escape of urine into the tissues, but which sometimes, if extensive enough to reach the vicinity of the neck of the bladder, may cause incontinence.

It is, however, usually only after the dilatation of the urethra has been accomplished that the forefinger, in examining the size and shape of the calculus, discovers that it is deposited on the centre of a wire, and that the wire projecting beyond it by its extremities extends from side to side of the bladder. It is vain to attempt to dislodge the embedded ends, and turn the wire so as to extract it by its extremity; it is wiser to crush the calculous matter deposited on it, and then hook its middle portion down. In the female the finger is the best instrument for extracting such bodies. It is simply hooked over the middle of the wire far enough to obtain a hold that will not slip, and the wire is drawn down by it, as if the object were to double it by bending it at its centre, and extract it with the bend foremost. This is indeed one of the

objects of the manœuvre, although it is seldom successful, since the wire usually breaks at the bend ere its extraction is complete, and thus leaves the two ends lying in the proper position for being separately seized by a dressing forceps and removed. But another important end is served by drawing down the middle of the wire, viz., the extraction of its ends from the places where they are embedded in the bladder wall. As the wire bends in the centre its extremities are approximated to each other, and as the bending proceeds, the longest measurement of the wire becomes so small that it lies free in the bladder, and may be pulled by its bend through the urethra, should it not have previously given way, as mentioned above, at the point of flexion. In either case its extraction is easy.

In this way, on one occasion, a hair-pin, 6 inches long (15.3 cm.) and $\frac{1}{16}$ inch (1 mm.) in diameter, that is, of the size of a No. 4 catheter, French scale, along with 150 grains of calculous deposit of phosphate of lime, were removed from the bladder of a girl aged about 13, who suffered from total incontinence of urine; and in another instance a wire $\frac{1}{8}$ inch (1.5 mm.) thick, of the size of a No. 5 French catheter, and $4\frac{1}{4}$ inches (10.8 cm.) long, along with 264 grains of fusible calculous deposit, were removed from a woman aged 36. In both cases the result was perfect.

The unpleasant consciousness that I had produced a life-long incontinence of urine in a patient while treading in what I thought was a safe surgical path, and the hope that I may prevent others from being similarly unfortunate, are the *raisons d'être* of the present paper, for it seems inevitable that the present plans of operating for stone in the female should be remodelled in some such sense as the above.

P.S.—During the discussion that followed the reading of this paper at the Garioch Medical Association in May 1879, Dr Davidson, Warrle, showed a calculus whose longest and shortest diameters were $2\frac{1}{8}$ inches and $1\frac{1}{8}$ inch; the longest passing diameter was $1\frac{3}{8}$ inch; the longest and the shortest circumferences were $6\frac{3}{8}$ and $4\frac{1}{2}$ inches; the circumference when grasped by a small forceps $4\frac{3}{4}$ inches, and the weight 980 grains. It was oval and roughish, had been removed from a patient by quick dilatation with the finger and forceps, and Dr Davidson believed that she had perfect power over her bladder. On subsequent inquiry, however, it turned out that she cannot retain her water.

Dr Wilson, of Old Meldrum, showed a stone, flat, oval, and smooth, whose longest and shortest diameters were 2 and $1\frac{1}{8}$ inches; the longest passing diameter was $1\frac{7}{8}$ inches; the longest and shortest circumferences $5\frac{1}{2}$ and $3\frac{1}{8}$ inches; the circumference when grasped by a small forceps was $4\frac{1}{8}$ inches; and the weight was 660 grains. It was removed by dilating the urethra with the finger, and extracting by rather a large forceps, and the patient "retained

her water almost perfectly the second day after the operation, and continues well."

Dr Paterson, of Inverurie, showed a third calculus, nearly spherical, and studded with projections like those on the husk of a horse-chestnut. Its longest diameter was $1\frac{7}{8}$ inch, its shortest $1\frac{3}{8}$, and its longest passing diameter $1\frac{1}{4}$ inches. Its longest and shortest circumferences were $4\frac{1}{4}$ and $3\frac{7}{8}$ inches, its girth, plus a small forceps, was $4\frac{3}{8}$ inches, and its weight was 396 grains. It was removed by gradual dilatation with sponge-tents, followed by extraction with the forceps, and the result was permanent incontinence.

I am indebted to these gentlemen for permission to mention their cases.

ARTICLE IV. — *Spurious Hydrophobia in the Lower Animals.*

By W. LAUDER LINDSAY, M.D., F.R.S.E., Physician to the Murray Royal Institution, Perth.

(Continued from page 1093, vol. xxiv.)

DR JENNER wrote in 1809, "I knew a gentleman who, about 45 years ago, destroyed the greater part of his hounds from supposing them mad when the *distemper* first broke out among them; so little was it then known of those the most conversant with dogs."¹ "Among the dogs was a distemper² which sooner or later ended in madness," in Cremona in 1764, says Fleming.

Here, again, is the portrait of a fit of *madness*—not hydrophobia—which is ascribed by the editor of the *Field*, of 13th July 1872, simply to over-eating, with deficient exercise. "The seizure is very sudden; a dog in good spirits, and without any warning, will, with a startled yelp, as if stung by a bee, dart off in no fixed direction after describing a large circle, and will run against a wall or hedge as though perfectly blind, which is no doubt the case for the time being. The yelping is kept up continuously, and the dog has a very terrified look. The result is generally *a fit*, the limbs becoming rigid, the eyes staring, and the whole frame convulsed." Sometimes the fit ends in death by exhaustion, or by accidental drowning. At other times the affected animal is shot, as hydrophobic. It does not quite appear here whether the "fit" alluded to was *epileptic* in its character; but it is likely to have been so, as we know that epilepsy is common in the dog.³

"Doubtless many a dog has been condemned as mad who was merely suffering from exposure to *heat*, and a sort of temporary

¹ Fleming, *Animal Plagues*, p. 409.

² I fear that this veterinarian term "Distemper" is used in very different senses.

³ *Vide* paper on "Community of Disease," p. 160.

delirium, for which a pail of cold water would have been found an effectual and speedy remedy.”¹

Symptoms so closely resembling some of those of rabies as to deceive the unwary veterinarian are produced sometimes by various mechanical or other irritants, such as intestinal worms, or the presence of foreign bodies in the pharynx. Thus, Fleming² gives a case in which the impaction of a piece of rag in the pharynx of a dog gave rise to the following morbid conditions or phenomena:—“The animal became restless and took to wandering, “retiring to obscure corners holding up its head and smacking its lips as if licking something and performing other singular manœuvres.” There was “that kind of convulsive champing which might have been mistaken for the snapping in the air observed in mad dogs,” as if they were catching flies. “Fidgetiness,” with an “anxious look,” also attracted notice.

A sheep-dog, “presumably rabid,” ran a muck in Huddersfield in 1874, “biting no less than six persons.” The animal was killed, and one of the necroscopic phenomena was a common pin, with “its head buried in the coats of the stomach, the point having penetrated through into the cavity, where about half an inch of it was free.” Such a post-mortem appearance rendered it not only possible, but probable, that “the dog’s violence was due solely to irritation, and not to rabies.”³

What occurs in the dog occurs also occasionally in other animals. *Nature*, of 17th August, 1871, records what it calls “A singular instance of Canine Madness in a Horse.” It had been sometime before bitten by a dog “supposed to be mad,” and was taken to the Royal Veterinary College of Berlin, “suffering from an uncontrollable propensity to bite, not only men and other animals, but any hard substance, and even its own body, by which it had severely injured its mouth and broken several of its teeth. After its admission to the hospital, this propensity was violently manifested in *fits*, preceded by remarkable convulsive movements.” There is no proof here of the existence of rabies. The biting propensity, depraved appetite, self-mutilation, general violence of behaviour, are all developed also in ordinary mania.

Another case of “a mad horse” is reported from Huddersfield. The animal was pronounced to be “rabid” the morning after it was first noticed to be “unwell.” With its teeth, we are told, it tore out its manger, and shook it as a dog shakes a rat. On the recommendation of a veterinary surgeon the horse was shot.⁴ It does not follow in such a case that, because *proof* was not adduced of the animal’s rabies, it did not suffer from that disease. The

¹ *British and Foreign Medico-Chirurgical Review*, October 1874, p. 350.

² *Rabies*, pp. 240–1.

³ *Lancet*, quoted in *North British Daily Mail*, 4th February 1874. Berkeley, too, commented on this case in the *Standard* of 4th February 1874.

⁴ *Edinburgh Courant*, 23d November 1870.

symptoms, *so far as they are narrated*, correspond with those of rabies; but they are common to other diseases. And the unfortunate summary disposal of the animal before its real condition has been investigated always leaves the *doubt* whether it was the subject of rabies or mania, or of some other disease, mental or bodily.

Again, there can be little doubt that cows, cattle, or *oxen*, that are simply "infuriated," or in a state of ephemeral mania, are frequently regarded as "mad" from rabies. Thus, in America, a so-called "mad cow" made a furious assault—a charge, "with a most terrific bawl," on several persons. We are told that the animal was "vicious" and "infuriated;" but, at the same time, its behaviour was most unnecessarily and erroneously ascribed to rabies, and under the impression that the animal was rabietic, and that eating its flesh would induce that disease in dogs, no less than eleven dogs that had fed on its flesh after it died were slaughtered!¹

A butcher in Leeds, in December 1872, was sentenced to three months' imprisonment for selling the carcase of a *sheep*—one of a number that "had been bitten by a mad dog, and had themselves shown symptoms of madness," which might not, however, have been rabies. The *Field* of 9th September 1871 gives the case of a sheep "which was said to have gone mad" near Cambridge, the madness being regarded as hydrophobia. "When first taken ill"—in such cases—"the sheep becomes very violent, and rushes at every one in sight; but it rapidly pines, and in three or four days is reduced to a skeleton and dies." Such an account is obviously insufficient to enable one to determine what was the nature of the affection in question, or whether it was primarily mental, as from fright.

In short, "nothing is more certain than the fact that dogs contract *many* maladies, which for a time assume all the symptoms of hydrophobia. There is hardly an experienced huntsman in England who cannot recapitulate many cases in which he thought that some favourite hound was about to go mad."² "There are three or four other canine diseases which might easily be mistaken for rabies."³

It is important to bear in mind that a rabietic dog *does not necessarily bite*. On the contrary, Druitt tells us that some "not only cannot be made to bite, but . . . show an increased fondness, and are perpetually trying to lick their owner's hands and face." This practice may, however, be quite as dangerous as biting;⁴ for by means of some trivial and unthought of scratch on man's hand, the

¹ The *Hannibal Times*, Mobile, quoted in *Glasgow Weekly Mail*, 24th August 1872.

² *Daily Telegraph*, of December 16, 1871.

³ *Pall Mall Gazette*, 5th November 1877, p. 10.

⁴ According to Youatt (work on the *Dog*, p. 134), the permitting a habit of licking the hands, face, or other naked parts of the body of man is not only dangerous, but "filthy."

morbid saliva of the dog may find an entrance to man's system, and so beget in him hydrophobia. Youatt says the same thing, that, while there is ferocity in some rabietic dogs, there is in others not only no disposition to bite, but, on the contrary, the utmost gentleness of disposition.¹ And he gives the case of a dog, "naturally ferocious," becoming, "contrary to his usual habit, perfectly tractable" in rabies; in which case the presence of that disease at all was deduced from *post-mortem examination alone*!² "If you do not meddle with a mad dog, it will not meddle with you. It will not go out of its way to bite, unless it is struck or interfered with."³ In other words, so far from being aggressive, the tendency of the really rabietic dog is—frequently at least—to seclude itself, and to shun all society, whether of men or its fellows.⁴ And it were wise if man, in such a case, would permit the poor animal to follow the bent of its salutary inclinations. "The contest"—in a certain case of alleged hydrophobia in man—between the man bitten and the dog that bit "looks much more as if the animal had been simply *frightened* and savage; for a dog with rabies, though it will snap at anything near it, is always trying to escape—to wander away and get into solitude."⁵

Biting, especially in the last stage of rabies, depends greatly, says Fleming, on whether or how far the animal is irritated by man⁶—a statement of suggestive significance. Dr Rink says: "During the last ten to twenty years a remarkable disease has raged among the Greenland dogs, consisting of a sort of *madness*, somewhat akin to hydrophobia, which is accompanied by a tendency to biting. . . . It generally causes death within one or two days. . . . But the disease is *not communicable by the bite itself*."⁷

On the other hand, it is quite as important to remember that the *bites of non-rabietic dogs* may, and often do, produce fatal disease in man. In regard to hydrophobia itself, Youatt⁸ remarks that it has not yet been determined "whether the bite of an animal in health, or of one merely enraged, may not cause the disease. . . . It is very certain, at all events, that the bite of an animal will prove fatal long before it exhibits any outward symptoms of rabies." Much, no doubt, remains to be determined concerning the *modus operandi* and effects of dog-bites, or the bites of other animals, on man. But this much has already been made out, I think—(1), That the bite of an animal in perfect health and temper

¹ Work on *The Dog*, 1845, p. 140.

² *Ibid.*, p. 128.

³ *Pall Mall Gazette*, 5th November 1877, p. 10.

⁴ Fleming (*Rabies*, p. 246) mentions, among the prodromata of rabies, that the affected dog has a tendency to keep aloof from man or other animals.

⁵ *Pall Mall Gazette*, 5th November 1877, p. 10.

⁶ *Rabies*, p. 245.

⁷ *Danish Greenland*, 1877, p. 100.

⁸ Work on *The Dog*, 1845, p. 158.

may produce fatal tetanus or hydrophobia—real or spurious—in highly susceptible human subjects;¹ and (2), that similar results—as well as others of a varied kind and determinate character—may and do spring from the bites of animals under the influence of exciting or depressing passions, such especially as anger, terror, jealousy, and grief.

All such cases of *mental excitement*, when it reaches a certain pitch, and gives rise to dangerous action, are usually ascribed by the most eminent writers of all classes to *rabies*, to what Fleming and other authorities describe as “primary or spontaneous” rabies. But this is an error arising from ignorance of the fact already stated that rabies is only one form, and a very rare form, of *animal insanity*, and that the majority of cases attributed to it—those, at least, arising from moral or mental causes, as well as from many other causes, partly mental and partly physical, or purely the latter—are really ascribable to simple acute and ephemeral *mania*. Here is such a case of so-called “primary or spontaneous rabies without any other dog having communicated the malady by wounding him,” which is, however, simply an instance of *biting mania*. “A surly mongrel, extremely enamoured and jealous, always hung about” (a certain mongrel bitch in rut) “and closely followed upon her steps; but as this dog was driven away and maltreated by his more vigorous rivals, he always failed in his attempts to gain her affections. Nevertheless, he continued day and night to brave all danger and withstand all worrying, until, at last discouraged and peevish, he withdrew from the contest. Then he exhibited a new phase in his character by biting a cat which had previously been his playfellow. Afterwards he attacked every dog he met, particularly those who had been *his rivals*, and worried them all more or less, no matter how strong and ferocious they might be. Finally, he cruelly injured a child, and would, no doubt, have resorted to other dangerous performances had he not been promptly killed.”² There is not the slightest evidence here, nor in hundreds of other cases that might be quoted, of the existence of rabies or of any of its allies or forms—hydrophobia or dumb madness. It is a simple case of what is called in the human Malay labouring under *ephemeral mania* (that may be produced, moreover, by quite the same kind of causes as those which operated in the case of this dog—rivalry, jealousy, love, disappointment, despair), “running-a-muck,” and the phenomenon in question is much more common in other animals than in man. Thus, indiscriminate assaults—wholesale destruction of life and property, human as well as animal—are common in the “rogue,” or banished elephant in India.

Pierquin long ago pointed out that the same causes that pro-

¹ *Vide* what I have said of the influence of *imagination* in such cases in the paper on “Spurious Hydrophobia in Man.”

² Fleming, *Rabies*, pp. 107–8.

duce erotomania in the dog, such as non-gratification of the sexual passion, lead also sometimes to hydrophobia, or what he calls "hydrophobic melancholia."¹

As regards the alleged influence of such a passion as *anger* in the production of rabies, Fleming himself points out this difficulty—that angry dogs are common enough, and are incessantly biting each other and man in all parts of the world, and yet rabies and hydrophobia are comparatively uncommon.² This brings us face to face with another puzzling problem—the *predisposition* to become rabietic or hydrophobic, to be affected by a poison, whatever be its nature, that does not affect the majority of animals or men. I cannot enter upon this question at present further than by quoting Fleming's assertion that dogs of "an irritable temperament, and which usually appear surly or vicious, are more particularly disposed to contract the malady spontaneously."³ But exactly the same may be said in relation to the genesis of all forms of mental excitement, including mania; in other words, the same conditions predispose to insanity, non-rabietic as well as rabietic.

Here is an instance of *terror* being a cause of so-called "rabies." A playful toy terrier, asleep in a railway carriage beside its master, was suddenly awakened by the scream of an engine whistle. It sprang up at once "apparently in a frantic state of alarm . . . behaving like an animal perfectly furious." It died on the second day after symptoms of rabies.⁴

Again, in an article headed "Sensational Dog Hunt at Braemar," a Glasgow newspaper informs us that a stray retriever, which had wandered from its temporary home in Glenshee, had bitten some men "attempting to restrain it. . . . The *hue and cry* was raised . . . that the animal was dangerously mad, biting ferociously all and sundry that came in its way. . . . The poor hunted brute was easily enticed into an outhouse at the Fife Arms Hotel, where it was examined, and found to be *quite harmless*."⁵ In such a case the biting is obviously a simple *act of self-defence* against man's cruelty.

If this be rabies, all I have to say is that there is a wonderful similarity in phenomena and causation between rabies and ordinary acute insanity—common ephemeral mania for instance. But I do not believe that, in this and hosts of other cases, we have to do with rabies at all. On the contrary, it seems to me that in such cases the assignation of the phenomena to rabies is a familiar illustration of the *errors of ignorance* constantly being committed by both medical and veterinary authorities, consequent on the want of due acquaintance with the *natural history of insanity in the lower animals*. The press, commenting on rabies, and the discussions

¹ In his work *De la Folie des Animaux*, vol. i. p. 506.

² *Rabies*, p. 112.

³ *Ibid.*, p. 115.

⁴ Fleming, *Rabies*, pp. 174-5.

⁵ *Glasgow Weekly Mail*, 21st October 1871.

concerning it among medical and veterinary writers, constantly complains—and not without good ground—that “the greatest ignorance apparently prevails, both as to the nature of the disease, and in regard to the best means of the determining its actual existence in the animal supposed to be infected.”¹

In connexion with the interesting question, whether anger in any of its degrees confers any specific virus on the saliva of the dog or other animals, whereby it becomes poisonous to man when inoculated by a wound of any kind, it is well to bear in mind that the mammary secretion equally of other animals and man “may acquire an actually poisonous character under the influence of violent mental excitement.”² And there is no reason why similar poisoning should not occur in such a secretion as the saliva.

Before leaving the subject of the bites of rabietic animals, it is also necessary to keep in mind that, according to some veterinarians, these animals in the *premonitory stage* of rabies are *harmless*. This opinion was, for instance, published by the Council of Hygiene of Bordeaux, in its announcement to the inhabitants of that city, for their protection against hydrophobia in 1872.³

It cannot be too frequently or forcibly pointed out and insisted upon, that the present mode of dealing with animals suspected of rabies is the very worst—the most absurd, injudicious, and cruel—that could be adopted. I refer to the summary shooting, drowning, or poisoning of dogs or other animals merely alleged to be “mad.” The only proper course to pursue includes isolation, observation, and experiment, in order to determine the real condition of the animal as to health or disease. And even in the event of the existence of rabies, or other form of madness being proved, it does not at all follow that the reckless destruction of the affected animal is either necessary or judicious.

An Edinburgh newspaper tells us that “a lady . . . had her arm bitten by a dog belonging to Mr Anderson, Stirling Arms Hotel (Dunblane). Mr Anderson had the dog immediately destroyed.”⁴ Why, is not stated. This is only an illustration or type of the common and senseless practice—of incidents constantly being recorded in the press. A Glasgow newspaper of the same year, 1871, when there appears to have been a *hydrophobia panic* in Scotland as well as in England, informs us likewise, with utmost seriousness, concerning “a poor hunted brute” of a dog which “was examined and found to be quite harmless,” that “it is likely, however, as a matter of *safety to the men who have been bitten*, that the animal will be forthwith destroyed”⁵—a usage as inhuman as it is unserviceable.

¹ *Edinburgh Courant*, 18th December 1871.

² Carpenter, *Principles of Human Physiology*, seventh edition, 1869, p. 813.

³ As quoted in the *British Medical Journal*, 20th July 1872.

⁴ *Daily Review*, 10th October 1871.

⁵ *Glasgow Weekly Mail*, 21st October 1871.

"If the Veterinary College authorities would take charge of dogs accused of madness, keep them in a safe place, where they could have exercise and be properly fed, watched, and reported on, many of these, we feel convinced, would be found to be suffering from some other malady, or perhaps only from *ill-treatment* and confinement. At present a dog doing anything out of the common, or seen to be running away, or lost and bewildered, is hastily charged with *madness*—just as, formerly, eccentric and ill-tempered old women were charged with witchcraft. And he finds it about as difficult to clear his character. . . . In nine cases out of ten, probably, where a dog supposed to be mad, has bitten any one, if, instead of being chased and killed, it were properly cared for and watched, it would live to reassure the person bitten."¹ "*Patience*, isolation, and the judicious use of calomel and other canine remedies, have restored many a poor brute to health, when sentence of death, by the most horrible of complaints, was about to be issued against him."² Berkeley, too, protests against the folly of putting suspected animals to death.³

Professor John Gamgee gave it as his opinion in 1874 that the suspected dog should be allowed to live for at least seven days, because "very few rabid dogs survive longer than the seventh day from the commencement of the disease. Practically it follows that a bitten person may dismiss all fear if the offending dog be alive and in good health *eight days after the bite*."

A more heroic procedure is recommended by authorities whose opinions must always command respect. Thus Youatt, referring to sheep bitten by supposed-to-be or really rabietic dogs, avers that "common sense and common prudence . . . indicate the slaughter of the sheep the moment there is strong *suspicion* of their having been bitten."⁴

The *repressive* measures adopted by the municipalities of our large cities, during *hydrophobia panics*, in order to prevent the action of biting in all dogs whatever, are quite as absurd as, and even more mischievous than, the wholesale destruction of suspected or rabietic animals. For these measures are only too apt to produce the very disease they are designed to prevent. Thus, Dr Blatin of Paris ascribes canine rabies there in great measure to the *muzzling* of the city dogs.⁵ Unquestionably the means taken in all parts of our own country also to prevent dogs from biting during the "dog-days"—so called—or during any other part of the year, are those best calculated to produce some of the forms of "madness," including rabies.

¹ *Pall Mall Gazette*, 5th November 1877, p. 10.

² *Daily Telegraph*, 16th December 1871.

³ *Times*, December 1871.

⁴ Work on *The Sheep*, 1856, p. 402.

⁵ In his work, *De la Rage chez le chien et les mesures préservatives*, quoted in the *Animal World*, June 1874, p. 94.

ARTICLE V.—*On the Adenoid Tumours of the Naso-Pharynx, and their Influence on the Hearing, Breathing, and Phonation, and on their Treatment.* By Dr LÖEWENBERG, Paris. Abridged and translated, by permission of the Author, by JAMES PATTERSON CASSELLS, M.D., M.R.C.S. Lond., Fellow of the Faculty of Physicians and Surgeons, Surgeon to the Glasgow Dispensary for the Diseases of the Ear, Aural-Surgeon to the Glasgow Royal Infirmary, and Lecturer on Aural-Surgery in the Royal Infirmary School of Medicine, Glasgow.

(Continued from page 1110, vol. xxiv.)

The Treatment of the Adenoid Tumours.—The therapeutics of this affection of the naso-pharynx divides itself into three points. These are :—

1st, The general hygienic measures for the re-establishment or maintenance of the general health.

2d, The surgical treatment of the adenoid tumours.

3d, The treatment of the concomitant or consecutive affections.

a. *Hygienic Treatment.*—Although the local treatment of this pharyngeal affection is the most important part of the therapeutic measures that are used in these cases, yet it is necessary at the same time to consider the general health of the patient.

When the patient has the lymphatic temperament, and which generally is the case in young subjects who are affected by adenoid growths, we combat this diathesis by the usual medical and hygienic measures, as good air, plenty of exercise, gymnastics destined to increase the activity of the respiration and circulation, and, in the last place, the general nutrition. To fulfil these indications, we use cold spongings, cod-liver oil, bitter tonics, the preparations of iodine and of iron, sea-baths, mineral waters (saline as well as sulphurous); a mild regimen, and the use of bland food, is necessary in order to avoid the irritation of the pharynx; then we prohibit the use of too hot or too irritating foods or drinks, alcohol, tobacco, excessive use of the voice, and the inhalation of impure air.

Even in the case of individuals who are not the subjects of this diathesis, but whose health has become enfeebled by the mouth-breathing, the employment of these measures is followed by signal service.

b. *The Local Treatment.*—Without the total destruction of the tumour or growths there can be no cure, and thus it comes to pass that the local treatment of this affection is the most important of all the therapeutic measures that we use to combat this disease of the naso-pharynx. These local measures are :—

1st, *Cauterization.*

2d, *Ablation.*

1. *The Cauterization*.—Repeated cauterizations suffice in certain cases to cause the disappearance of the adenoid tumour, and although it be true that this mode of treatment requires more time to effect a cure than by the ablation of the growths, yet there are cases in which the cauterization is the best mode of removing the disease; as, for instance, when the growths are flat, or sessile, or implanted on a base so broad as to offer little hold to a cutting instrument or to an *écraseur*.

It is also indispensable in the cases of children in which all "operation" is forbidden by the parents.

For the cauterization of these tumours the following instruments are required:—*A porte-caustique*, having a cylindrical stem of pure silver, of 0.23 cm. in length, and 0.004 mm. in diameter. This stem is attached immovably to a conveniently-sized handle, and near to the extremity which is intended to enter the pharynx it is curved at a distance from its end sufficiently great to admit of the roof of the naso pharynx being reached with it, and without coming into contact with the other parts of this cavity, unless this be deemed necessary. This bent part forms, with the remainder of the stem of the instrument, an angle similar to that which is formed by the axis of the mouth and that of the pharynx. At the end of the instrument there is a prismatic-formed knob of pure silver, which is 0.017 mm. in length, and 0.004 mm. in breadth. The face of this is provided, on all its facets, with little roughnesses, which are destined to facilitate the adherence of the caustic. It is an advantage to bend the stem of this instrument near to the handle, so as to have the field of observation unobstructed by the hand of the operator.

The caustic used generally is the ordinary nitrate of silver, either pure or mixed with a portion of nitrate of potass. The latter being preferred when, owing to the restlessness of the patient, it becomes difficult or even impossible to limit the area of its application. This weaker caustic is also used in the cases of little children, and its strength is in the proportion of one part of the nitrate of silver to two of the nitrate of potass fused together.

The following is the mode in which we employ the *porte-caustique*:—Having ascertained the exact position of the tumour, we melt the caustic, and dip that portion of the roughened prismatic extremity of the instrument into it. We take care, however, not to plunge the entire prism into the melted salt, except in cases in which the whole naso-pharyngeal cavity is occupied by these vegetations.

This cauterization is usually undertaken aided by the view which one gets of the part about to be cauterized in the rhinoscopic mirror; where the mirror cannot be used in this way, recourse must be had to palpation to ascertain the exact spot to which the caustic ought to be applied.

The left index finger being carried into the naso-pharynx, directs

and limits the area of the local action of the instrument. By it, also, the prismatic cautery may be pressed upon the growth.

So soon as the practitioner can judge that the cauterization has been effectual, the instrument is rapidly withdrawn in the line of the axis of the naso-pharynx, in order to avoid all needless contact with its tissues.

Often the patient raises the soft palate, and thus renders the operation of cauterization difficult, if not impossible, of performance; but this obstacle can at once be removed by telling the patient to breathe through the nose, on doing which the raised palate at once falls, and the naso-pharynx becomes accessible to the surgeon.

In order to protect the naso-pharynx from an undue or accidental contact with the nitrate of silver, we cover the nitrated prism of the *porte-caustique* with an indiarubber tube 0.02 cm. in length, and 0.006 to 0.007 mm. in diameter. When the prismatic end of the instrument thus covered arrives in contact with the part to be cauterized, we press the point upon it, the rubber tube recedes, and the caustic is uncovered.

The operation being finished, the instrument is withdrawn by a movement which causes the indiarubber tube to recover anew the face of the cauterizing prism; in this way the walls of the pharynx are preserved from all unnecessary cauterization. This expedient is easy of application in those cases where the tumour occupies the vault of the naso-pharynx (hypertrophied laryngeal tonsil) or the neighbouring parts.

A point of some importance in using the *porte-caustique*, whose prism is charged either with pure or mixed caustic, in these throat affections is the fact, that sometimes the caustic is dissolved by the abundant secretion in the naso-pharynx, and, running downwards, may cauterize all the tissues to a surprising depth. Sometimes this cauterization reaches to the orifice of the larynx, and even extends to its interior, giving rise to very troublesome and often alarming symptoms, which often do not make their appearance at the time, but afterwards, and when the patient has got beyond the care and help of the surgeon.

From habit, and in order to prevent the possibility of such accidents taking place, we cause our patients who have been more than usually well cauterized to use the naso-pharyngeal salt-douche, and likewise to gargle the mouth and throat with a solution of salt and water, by which means all excess of caustic is neutralized and rendered innocuous.

In view of the importance of this point, we will describe the mode of using the naso-pharyngeal douche, and the particular manner in which we recommend our patients to use the gargle.

(a.) *The Naso-Pharyngeal Douche*.—This proceeding is of so great and so general utility that it is desirable to see its use more and more extended.

This method has been so ably described by the author of a *résumé* of our *mémoire* (of 1865), and which appeared in the *l'Union Médicale*, that we cannot do better than quote the exact words of its description in the pages of that journal.

"This douche (naso-pharyngeal) serves to cleanse the nasal fossæ, the posterior nares, the orifices of the Eustachian tubes, and permits also of carrying to all these parts certain medicated solutions. Its use, then, is of great utility in affections of the nose and of the pharynx.

"This douche differs from the other means in use till now for a like purpose, because it allows of a continuous and mild current to pass along the naso-pharynx. The liquid being injected gently into the nasal passage of one side, fills this cavity, and passing by the superior part of the pharynx into the opposite nasal passage, fills it, escaping by its anterior opening. This injection can be executed with a suitable syringe. This method of douching these passages is based on the experience of the well-known physiologist E. H. Weber, who has shown that when one fills the nasal cavity with a liquid the soft palate rises, and transforms in this way the superior part of the pharynx into a close cavity from the bottom. The fluid thus passes from one nostril to the other without falling into the inferior pharynx, except the patient performs the act of swallowing. During the injection the patient respire by the mouth.

"When we wish simply to wash these parts, we use tepid salt water, which is better borne than pure water. In this way we can use solutions of sulphate of zinc and of alum in chronic catarrh of the naso-pharynx; or in ozena, solutions of chloride of lime or of permanganate of potass, by which, in such a case, we not only cleanse the passages, but remove the offensive smell so characteristic of this nasal disease (Cousin).

"This douche is equally valuable in the therapeutics of the adenoid tumours, and much more during their surgical treatment, whether it be to prepare the field of operation by removing the generally very abundant secretions from the naso-pharynx, or to employ hemostatics, or substances destined to neutralize and to limit the action of caustic. And it is our custom never to undertake an operation on the naso-pharynx until the patient has acquired a certain degree of facility in performing this proceeding. Indeed, we would consider it to be very imprudential of any one to attempt a surgical operation on these parts without having in the first place familiarized the patient with its use.

"Unhappily, the employment of this douche is often extremely difficult, if not impossible, owing to the existence of very large vegetations opposing the passage of the fluid from one nostril to the other. In such cases we are satisfied by accustoming the patient to bear that part of the fluid which penetrates into the naso-pharynx, and remain there if it be but for a short time. For we regard it as *conditio sine quâ non*, that the patient obtains at

least that amount of practice in the use of the douche before proceeding to perform any operation whatever in that region."

With this douche it is useful to combine the action of the gargle.

(b.) *The Gargle after a Particular Method.*—We employ the gargle, even as other writers do, in the following manner: The patient, inclining his head horizontally backwards, makes some movements in the throat—which may be called *quasi deglutition* movements—without making the definite and complete act of swallowing. By doing so one succeeds in pushing the liquid much higher behind the curtain of the palate than is possible by the ordinary method of gargling; indeed, some persons are able to effect this manœuvre so well as to be able to eject the fluid out by the nose; more than this, the violent muscular contractions that accompany this mode of gargling serve effectually to detach and to expel masses of secretion from these passages to the great relief of the patient. (Wendt, *loc. cit.*, p. 254, also the proceeding of Guinier, the laryngo-nasal gargle.)

When the employment of the caustic is followed by a too intense or too prolonged pain, and there is room to fear that it is becoming too severe in its action, in these circumstances all action of the nitrate of silver may be suppressed at once by the successive employment of the above described nasal douche and gargle.

By accident, again, a piece of the caustic may detach itself from the prism, and become enclosed amongst the growths in the nasopharynx—a thing which, in spite of all precaution, may occur now and again; when this accident *does* occur (we recognise that it has happened, by inspecting the prism, whence we may see that it wants a part of its caustic covering; and by the persistent and increasing pain from which the patient suffers, out of all proportion to that which follows ordinary cauterization), the use of a solution of common salt (sodium chloride) in form of the above nasal-pharyngeal douche and gargle, and the swallowing of a few mouthfuls of the solution itself, soon neutralizes the caustic; but in these circumstances we never quit the patient until we are sure that the whole of it is neutralized, or until we have witnessed its expulsion with our own eyes.

The cauterization is repeated after the eschar and the inflammation which it has created and evoked have fallen. With some patients this occurs in the space of twenty-four hours, with others more slowly. We ascertain with certainty, however, if these be removed, by inspecting the parts with the rhinoscope. The number of seances varies with the size and consistence of the tumours, and according to the tolerance of the individual.

(To be continued.)

ARTICLE VI.—*Note on a Case of Lateral Curvature of the Spine treated by a new Method.* By GEORGE A. BERRY, M.B.

CASES of aggravated lateral curvature of the spine necessarily require prolonged treatment, and must remain long under observation before the final result of any treatment is definitely arrived at. This, it is hoped, may serve as an excuse for proposing the method adopted in the following case, which has not yet been brought to a conclusion, but which I am unable to retain any longer under observation, as the patient lives on a small island in the Western Highlands, and must shortly return home. The apparatus used, however, seems so thoroughly to fulfil the indications required, and the improvement produced has been so marked and rapid, and that after a fair trial of Sayre's method, that I have considered it worth while to publish the case, as a suggestion at any rate, notwithstanding its being necessarily incomplete, and the more so, that not being engaged in general practice, I shall not likely have any further opportunity of treating similar cases.

Robert Kirk, aged 9, a native of Eigg, was admitted into Ward 14, Surgical, under the care of Dr Duncan, in December last. He was found to be the subject of lateral curvature of the spine to an unusually exaggerated degree, the curvature being to the left. He could not stand erect, and walked with an extremely waddling gait. This condition, which had lasted for two years, followed, according to his own statement, immediately upon a prolonged attack of what he called rheumatism of the back and limbs, which confined him to bed for a year. The curvature was found greatly to disappear when the weight of the head and shoulders was removed by suspension or otherwise.

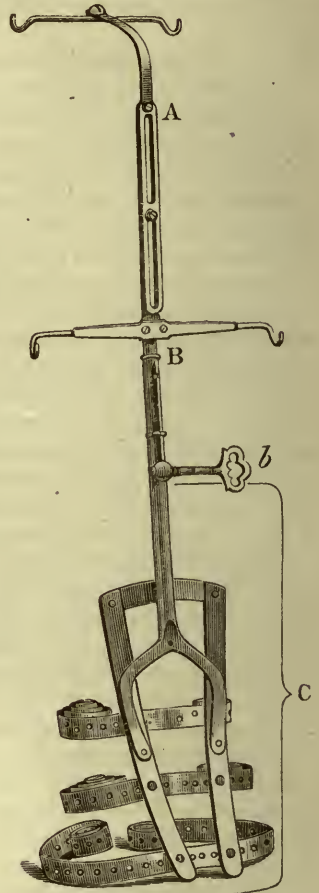
Two attempts having been made unsuccessfully at maintaining extension by means of Sayre's jacket applied while the patient was swung by the neck and arms, I obtained Dr Duncan's permission to try the following treatment all the more readily, as he has been in the habit in his clinique of pointing out the inefficiency of Sayre's jacket alone in these cases, and had himself been considering the advisability of trying some similar modification of Sayre's treatment. He points out that, owing to the gradual slipping of the jacket, extension is not sufficiently maintained.

Two large pieces of extension plaster were applied over the whole of the back, on each side of the spine (straightened at the time by extension in the recumbent position), and reaching well round the sides to the front of the ribs. Having found that by pulling on the ends of the plaster the spine could be easily straightened, a plaster-of-Paris jacket was then applied according to Sayre's method, into which was incorporated a steel splint differing from the jury-mast used by that surgeon for the treatment of cervical caries, etc., in having a cross-bar at the level of

the shoulders, which was capable of being lengthened by means of a rack and key, instead of the ordinary headpiece. After the plaster-jacket had set, the ends of the extension plaster were brought round the horizontal bar, and tightly sewn in position. On then screwing up the splint to a height which fell short of causing the patient any great inconvenience, extension was applied to the skin of the back, the counter extension being distributed over the pelvis through the jacket. The shoulders were at the same time drawn back to the cross-bar, and maintained in that position by means of a turn or two of a bandage.

On removing this apparatus after four weeks, the patient could stand perfectly erect, and the spine exhibited only a trace of the previously existing curvature, and although the patient ran about as usual for three days only a slight trace of return could be detected. There was at the same time a very considerable improvement in his gait. The second application of the splint was not so successfully made, and had to be taken down at the end of three weeks. The result, however, was still very good, although there can be little doubt that had it been better applied it would have been still better.

It may be well to state briefly what points seem to require attention in order to get the full effect of extension applied in this way. In the first place, it is most important that the direction of extension should lie in a plane parallel to, and as close as possible to the back, and extension should not begin until the horizontal portion of the splint is on a level with the shoulders, so that the whole of the force may be utilized, and the strapping not pulled from the skin, which was greatly the cause of the second application not being so successful in the case cited, as the plaster was detached down to the centre of the back, to below the upper curve, in fact. It is in order to avoid this separation of the plaster from the skin that it appears advisable to brace back the shoulders.



DESCRIPTION OF DIAGRAM.

- A, Head-piece, capable of being adapted in the usual way.
- B, Transverse bar, round which strapping fastened, capable of being moved up and down by the key at *b*.
- C, Portion below the key which is incorporated with plaster-of-Paris jacket.

Again, the splint should be screwed up at least once a day, as it has a tendency to slacken from the plaster slipping slightly up, and the jacket slightly down, and perhaps also from a slight stretching of the skin.

The method of applying the extension strapping to the whole surface of the skin of the back and sides was suggested to me by Dr Duncan, and is no doubt better than merely using two strips down each side of the spine, as I had at first intended, especially if applied while the back is extended. Further, it is a good thing to swing the patient while turning the ends of the strapping round the cross-bar. The reason for this is obvious. Finally, it is probable that the addition to the splint of a jury-mast headpiece, in order to take off the weight of the head and neck, would still further enhance its efficacy. Such a splint has been made, and will be applied to the patient before he is discharged.

ARTICLE VII.—*Lipæmia and Fat Embolism in the Fatal Dyspnœa and Coma of Diabetes.* By Professor SANDERS, M.D., and D. J. HAMILTON, M.B., Demonstrator of Practical Pathology in the University of Edinburgh, Pathologist to the Edinburgh Royal Infirmary.

IN a very able paper in the *Deutsches Archiv für Klinische Medicin*, in August 1874 (p. 1), Professor Kussmaul first drew the attention of the profession to a remarkable mode of death in diabetes mellitus, of which previously no adequate notice had been taken. The fatal symptoms consisted in a peculiar kind of dyspnœa, often of terrible intensity, which, after a time, was accompanied by and ended in coma. Physicians had, indeed, long previously been aware that among the dangerous and deadly complications, so apt to arise unexpectedly in the course of diabetes, coma was of not unfrequent occurrence. Rapidly fatal respiratory symptoms had also been occasionally observed. But the death by coma, when not due to cerebral hæmorrhage, was commonly ascribed to suppression of urine or uræmia; and the cases which terminated by sudden lung symptoms were set down to a rapid form of pneumonia—a “*pneumonie foudroyante*.” Kussmaul, after the graphic description of three marked cases of diabetic dyspnœa and coma which, within a year, had occurred in his practice, found from an analysis of the symptoms during life, and from the evidence of the autopsies, that the terminal coma he described could not be assigned to uræmia, and that the dyspnœa did not present the usual symptoms, physical signs, or lesions of pneumonia. Accordingly, on arguing the matter, he was led to the important conclusion that the dyspnœa and coma must be ascribed to some profound alteration in the blood of diabetics.

Many years before, Petters, attracted by the peculiar chloroform smell of the urine and excreta of diabetics, had discovered the presence of acetone in the blood and urine of a patient, and had referred the fatal issue of his case to acetone poisoning (*Prager Vierteljahrschrift*, 1857). Kaulich (*Prager Vierteljahrschrift*, 1860), confirming these observations, detected acetone not only in diabetes, but in various other diseases, especially of the stomach. In his opinion acetone was formed by the fermentation of grape sugar in the stomach. But the symptoms which he ascribed to acetone poisoning—apathy, somnolence, and especially *weakness* and *slowness of respiration*, etc.—were not compatible with the phenomena observed in Kussmaul's cases. Betz (1861) and Cantani (1867) continued the inquiry. Cantani thought that acetone was formed in the liver cells, and described four types of acetonæmia. But none of these observers appear to have subjected the acetone theory to any experimental investigation. This defect Kussmaul endeavoured to supply. Experimenting on rabbits and dogs by subcutaneous injection and by inhalation, he found that acetone could produce intoxication and stupor, but not anæsthesia. It resembled alcohol more than chloroform in its effects; it was more potent than alcohol, but also more volatile, speedily evaporating by the lungs. In moderate amount, acetone caused intoxication with slow respiration; in the highest degree of acute acetone poisoning, along with the stupor, the breathing was slow, somewhat stertorous, and the respiratory movements were unusually deep, becoming afterwards irregular. Kussmaul thought that the coma in these experiments resembled the diabetic coma, and that the unusually deep in- and expiratory movements in the first stages of acetone poisoning were similar to the dyspnœa observed in his patients. The final conclusion Kussmaul arrived at was, that there was no objection, on experimental grounds, to the theory of acetonæmia as proposed by Petters and Kaulich, but that the symptomatology of this condition in man had to be worked out. At the same time, he noticed the objection to this theory that a large quantity of acetone, apparently as great as that of alcohol, is necessary to produce poisoning, and that we are ignorant, whether a substance which exhales so rapidly through the lungs can accumulate in the blood in large amount. These are no doubt serious difficulties. He suggests, however, that "the long-continued introduction of acetone into the blood might, in weak conditions of the nervous system, induce a chronic poisoning, which might suddenly assume an acute form, just as chronic alcoholism in drunkards breaks into delirium tremens."

Such is a brief abstract of Kussmaul's statements. His paper, so far as I am aware, is still the principal source of our information on the subject. The most important contribution in our own country has been made by Dr Balthazar Foster ("Diabetic Coma, Acetonæmia," *Brit. Med. Journal*, 19th January 1878, p. 78), who

has recorded several well-marked cases, one of them accompanied by an autopsy and investigation of the peculiar condition of the blood. Dr Foster strongly supports the acetonæmic theory; but his paper is doubtless so well known that I need not at present refer to it more in detail.

My interest in the subject was specially aroused by a case of extreme diabetic dyspnœa, which I witnessed in March 1877. A young gentleman, a farmer, about 24 years of age, had been subject to diabetes mellitus for about four years. Under treatment, including a visit to Carlsbad, the sp. gr. of the urine had been reduced from 1040 to 1025. But his medical attendant, Dr Ballantyne of Dalkeith, had for some months been struck with his gradually increasing weakness, and more especially loss of muscular power, not to be accounted for either by the quantity of the urine or the percentage of sugar passed. Troublesome gastric attacks had latterly come on, marked by spasmodic pains in the stomach and bowels, and accompanied with acidity, and sometimes with vomiting. One of these attacks occurred immediately before the fatal dyspnœa. The alarming symptoms of breathlessness appeared suddenly about half-past one P.M. on 15th March. I saw him about midnight. He was sitting up in bed in a state of intense dyspnœa. The respirations, both inspiratory and expiratory, were of extraordinary fulness and depth, exactly (as Dr Ballantyne expressed it) like those of a man who had won a mile race. The ribs moved upwards and outwards rapidly to their fullest extent, attended by elevation of the shoulders, and the chest descended again with a force equally exaggerated. It was a picture of air-hunger so insatiable that no violence of respiratory effort could appease it. The air entered the chest with perfect freedom. The respiratory murmur was everywhere distinctly audible, no râles were present. A panting noise was occasioned, as in a person out of breath from over-exertion, but there was no stertor or abnormal sound. The respirations numbered about 30, and were regular. The face was flushed, but the lips not livid. The pulse was about 100, and the temperature over 100° F. Auscultation of the heart gave no clue to explain the dyspnœa. Stimulants, which were freely administered with antispasmodics, failed to give any relief. The intense dyspnœa continued during the following day. Towards the end there was a little delirium, but not at all marked. The surface got cold, his hands and lips became blue, the breathing continued rapid, but became more superficial. He was unconscious for some hours before death, but he seemed to die rather from exhaustion and collapse than from coma. The fatal dyspnœa lasted about thirty-six hours, from 1.30 P.M. of the 15th to 7 P.M. of the 16th March. I have only further to add that the urine was passed freely during the attack, and that a peculiar smell, likened to that of vinegar, was perceived in the room—a

phenomenon which has been often noticed in cases of acetonæmia. (For the details of the case I have been indebted to the kindness of Dr Ballantyne.)

At the time of seeing this case I was not acquainted with Dr Kussmaul's paper; but on referring to it I at once recognised in his description the extreme inspiratory and expiratory dyspnœa—the deep, double dyspnœa—which I had observed in the above case. As no autopsy was made there was no examination of the viscera or the blood. After this my assistant, Mr Hamilton, more than once showed me specimens of the peculiar pink or creamy blood of diabetics, but on chemical examination only minute quantities of acetone were detected in them. No case of fatal diabetes occurred under my own care till 7th November last (1878). At that date William Jarden, æt. 20, labourer, was admitted to my Ward (No. 1) in the Royal Infirmary, on account of advanced diabetes mellitus, with progressive emaciation and weakness. The amount of urine varied from 220 to 215 ounces daily; of sp. gr. 1044 to 1046. A faint, sweetish smell, somewhat like that of chloroform, could be perceived in his breath. Suspecting that the case would take an unfavourable course, I had him carefully watched. On the morning of 29th November symptoms of dyspnœa came on. The respirations were deep, from 24 to 32 per minute, but the distress was never so intense as in the case above mentioned. The pulse became rapid and small. In the evening unconsciousness gradually came on, twitchings were occasionally observed in the hands and arms, extending to the legs and to the head. They continued for about an hour, but disappeared on his passing urine. He died at 4 A.M.

Although not so extreme a case as the one I had previously seen, I resolved to have the blood and viscera particularly examined. The blood presented the peculiar pink colour, with separation of a milky or cream-like serum, such as has been often noticed in diabetes, and especially in the cases of so-called acetonæmia. I had arranged for a chemical estimate of the quantity of acetone in the blood; when it occurred to me that the fatty condition of the blood might afford, in the way of fat embolism, an explanation of the dyspnœa perhaps more satisfactory than the acetone theory, which, for reasons which I need not now specify, had appeared to me far from established. I found that the same idea had occurred independently to my assistant, Mr Hamilton. At my request, therefore, he undertook to investigate the blood and the viscera both in the fresh and preserved condition. Evidence soon appeared confirmatory of the view that fat embolism was indeed present. The following description will give more precisely the results of the investigation:—

The *post-mortem* examination of this case was made on the day following death, the temperature at the time being low, so that at the autopsy the body presented none of the usual features of de-

composition. The following, in brief, is an account of the appearances met with:—

Height, 5 ft. $9\frac{1}{2}$ in.; circumference at shoulders 39 in. The usual lividity was ill marked, but the “rigor mortis” was evident. The complexion was dark, the pupils were dilated, and the lips anæmic. The only other external appearance worthy of notice was that the cuticle of the skin of the shoulders was peculiarly dry, and in a state of desquamation. The right side of the heart was distended with a large quantity of very peculiar-looking blood. It was fluid, with the exception of a few small isolated and pale yellow coagula, and when removed from the heart it had a pinkish colour, and looked like a mixture of prune-juice and curdled milk. When allowed to stand in a vessel for about half an hour, it separated into two strata of about equal bulk, the upper being milk white, the lower of a deep pink colour. The same appearance was noticed in a remarkable manner in the blood which fell upon the table. In a few minutes it became white on the surface, the deeper pink coloured stratum being concealed by the superjacent milk-like fluid. The blood was kept in a closed vessel for twenty-four hours, and by this time the upper stratum had become of a light pinkish gray colour. When first removed the blood had a remarkable odour, which was variously compared at the time to vinegar or sour beer; but in about a quarter of an hour after it had been exposed to the atmosphere, this odour was replaced by one of a decidedly ethereal nature. On comparing it with that of acetone, the resemblance was very marked. It was so powerful that it could be detected at some distance. On microscopic examination of the upper milk-like stratum, when first removed from the body, it was found to consist of a fine chyle-like emulsion of oil globules suspended in a fluid. Some were of large size, but the most of them were finely divided as in chyle. Ether, when added to the fluid, in a test tube, removed the milk-white colour by solution of the oil, but left a slight hazy precipitate, which appeared to be of an albuminous nature. When the white stratum of blood was examined on the following day, the oil globules were found to have become much larger, and presented the appearance seen in Fig. 1. They varied in size, some of them being now twice or three times as large as a coloured blood-corpuscle, the increase in their size having evidently been caused by several small globules running together. A finely granular precipitate, evidently not of an oily nature, was also distinctly seen, which held the oil globules loosely together in masses. It was soluble in potash and in acetic acid, and was evidently of an albuminoid nature. The oil globules became black on the addition of perosmic acid, but the albuminoid precipitate showed no such reaction. The ethereal or acetone-like odour seemed to be stronger on the following day than it was previously, and continued for a week to be distinctly perceptible. The deeper stratum of blood

showed ordinary blood-corpuscles, with occasional oil globules and granular matter, the blood-corpuscles not being in any way altered. The heart was normal, with the exception of slight dilatation of the orifices of the tricuspid and pulmonary artery.

The lungs and all the other viscera emitted the same ethereal odour noticed in the blood, the lungs exhibiting it, perhaps, more perceptibly than any of the others. The right lung was congested, weighed 1 lb. 8 oz., and the cut surface had a *bright scarlet colour*. Its larger bloodvessels contained much blood, which exhibited the same milk white stratum as that seen in the heart. The bronchi contained some muco-purulent secretion. The other lung exhibited similar appearances. On microscopic examination in the fresh state, especially after the addition of perosmic acid, the greater number of the capillaries ramifying on the alveolar walls were seen to be filled with minute oil globules, so that their plexuses were rendered distinct. In many of the smallest branches of the pulmonary artery oil globules of large size were also seen, filling the lumen of the vessel and occluding it, as in a case of fat embolism from fractured bone. These appearances were more evident at some parts of the lung than at others, nearly every vessel in certain areas appearing to be choked in this way.

The liver was large, and weighed 4 lbs. 8 oz. The cut surface was throughout of a pale, gray colour, but there were patches every here and there which showed the pallor more than others.

The kidneys were both large, the left weighing $8\frac{1}{2}$, and the right $9\frac{1}{2}$ oz. The capsule stripped off easily, leaving a mottled surface with congested stellate venous radicles, and, on section, the cortex had a pinkish-gray colour, while the medulla was somewhat congested. Both organs were flabby in consistence.

The spleen was very large, firm in consistence, and apparently contained much blood. It weighed $16\frac{1}{2}$ oz.

The coats of the stomach were thick, the mucous membrane was congested in certain places, and throughout the greater part of its extent presented the "état mamelonné."

The sulci between the convolutions of the brain, at the vertex, seemed to be unusually deep, and the vessels of the pia mater, in this situation, were congested. The vessels at the base appeared to be healthy. The medulla oblongata felt particularly hard, almost cartilaginous in consistence, more especially in the neighbourhood of the corpora olivaria, and, on section, the vessels seemed to be large and congested, a condition noticed in the vessels of the basal ganglia as well. The whole brain substance was of particularly firm consistence, probably due to the organ having been examined soon after death. The fourth ventricle, fornix, and corpus callosum were natural, so far as could be estimated by naked-eye examination.

Portions of the organs were placed in different hardening solutions, so as to fit them for more thorough microscopic examination,

the hardening fluids employed being spirit, chromic acid, and Muller's fluid. It was afterwards found that the appearances were alike in all, the hardening fluids not having made any deleterious alteration in the condition of the organs. Those which were hardened in spirit were found to be most serviceable, as they could be further treated by reagents calculated to dissolve the albuminoids or oily particles. The drawings which we give of the lung and kidney (Figs. 2, 3, and 4) were taken from preparations hardened in spirit, and then stained in perosmic acid, and the following is the description of the morbid appearances which were revealed:—

Looked at with a low magnifying power (50 diams.), nothing of any note was to be seen in the general appearance of the pleura and lung tissue. The air-vesicles were empty, and were not altered in shape or size. The only abnormality present was situated in the bloodvessels, more especially in the pulmonary arterioles. Nearly the whole of these, as well as the most of the capillary vessels on the alveolar walls, were filled with some material of a globular nature, which stained black with solution of perosmic acid. This peculiar appearance was observed throughout the lung generally, but in each microscopic section there were areas in which the black-stained material could be seen in nearly every individual capillary. Finely granular masses containing round black-stained globules were observed in the larger subdivisions of the pulmonary artery, as well as in branches of the bronchial artery ramifying on the bronchial walls. On examination of this material with a high magnifying power (300 diams.), it was evident that the globules contained in it were those of oil, and that the black appearance was caused by the staining with perosmic acid. This is represented in figure 2, where it will be seen that the arterioles and capillaries, instead of containing blood, are each choked with a mass composed of oil globules and granular matter. The oil globules vary in size, some of them being considerably less than a coloured blood-corpuscle, while others are many times larger. In several places a whole capillary plexus is seen to be filled with a continuous mass of oil, so that its ramifications on the alveolar wall look as if injected with ink (Fig. 2 *b*). In most cases, however, the oil globules remained isolated, being separated from each other by the above-mentioned finely granular precipitate. There was a constant tendency noticed in the larger oil globules to spread out and to adhere to the wall of the vessel (Fig. 2 *a*), while the smaller globules remained free in the centre of the lumen. The granular precipitate in which the oil globules lay was of an albuminoid nature, and was soluble in potash and acetic acid. Sometimes, however, a mass of fibrin, with numerous blood-corpuscles in it, was noticed in the larger branches of the pulmonary artery, but in those vessels which were occluded by the oil globules blood-corpuscles were rarely observed. They did not seem to have undergone any alteration.

Microscopic examination of the kidneys, conducted in the same manner, showed healthy renal structure. The epithelium in the convoluted and straight tubules was normal, and the only morbid state noticed was in the contents of the bloodvessels. The appearance they presented is seen in figures 3 and 4, figure 3 giving a low power, and figure 4 a high power view of a portion of the medulla. In the low power representation it will be observed that the vasa recta contain numerous oil globules similar to those seen in the lung, while in that more highly magnified these are again noticed lying in the vessels in the midst of a granular precipitate. The oil had not usually reached the Malpighian bodies, but here and there a loop of capillaries within a Malpighian tuft was found to be plugged. None of the oil had got into the uriniferous tubes. The contents of the bloodvessels showed the same reactions with acids and alkalies as observed in those of the lung.

On examining the liver, the larger branches of the hepatic artery were seen to contain a little oil, but this was very limited in amount. The liver cells did not seem to be more fatty than normally. In other respects the liver exhibited nothing morbid.

The medulla oblongata, pons Varolii, and several other parts of the brain were carefully examined, but nothing of a decidedly morbid character was found. The vessels were in some instances large, but not more so than in many otherwise normal brains. They contained blood-corpuscles, and no oily embola were detected in them, although an albuminoid granular mass was occasionally present.

The most remarkable points brought out by the *post-mortem* examination of this diabetic are—First, the peculiar condition of the blood; and, second, the “fat embola” in the vessels of the lungs and kidneys. We have seen that not only were the small vessels plugged with the oily embola, but that in the larger and middle-sized arteries the oil globules spread themselves out on the wall of the vessel, and adhered to it. The obstruction thus caused must have been a serious impediment to the flow of blood through the arteries; and when we examine the state of the capillaries, and observe how each vessel usually contains one or more oil globules, it cannot, we think, be doubted that we have here to do with a most effectual embolic plugging of the pulmonary arterial system. Although a certain number of oil globules were found in the kidney, yet the lung seems to have arrested most of them, probably on account of the great abundance of its capillary networks.

We have made *post-mortem* examination of another subject of diabetic dyspnoea and coma, a record of which we subjoin on account of the great similarity of the appearances with those in the case just related.

The patient, a female child, about 10 years of age, was in the

Hospital for Sick Children, under the care of Dr Linton, by whose kind permission we are enabled to give a report of it. The child had been admitted as an ordinary case of diabetes mellitus, and except that there was a large quantity of sugar in the urine, no symptoms of urgency were present. She was able to go about, and seemed in good enough health. Three days before her death, however, difficulty of breathing was noticed to come on, and it was supposed that she was suffering from an attack of pneumonia. The dyspnoea became excessive and very alarming in character, but after lasting a few hours passed off, and she seemed to rally for some hours following. It again supervened, and this time was more severe in character, and very laboured. When this second attack of dyspnoea had lasted for some hours, she was noticed to become drowsy, and ultimately passed into a state of complete coma, in which condition she died. The whole course of the fatal attack in this case did not occupy more than three days.

The *post-mortem* examination revealed exactly the same appearances as those just described in the first case. The blood had the same milky stratum, as well marked as in the case we have recorded, and the organs to the naked eye appeared to be healthy. The microscopic examination of the blood showed that the upper stratum consisted of a fine chyle-like emulsion of oil, the globules being minutely divided. We much regret that in this case the organs were not examined microscopically. The case occurred before that just related, and our attention being preoccupied by the acetonæmia theory of the disease, we had no thought of making any examination of the organs for the detection of fat embolisms.

The blood and the organs had the same sour odour when removed which we have described in our former case, and, as in it, the odour became ethereal in character after being exposed for some time to the atmosphere. We collected as much of the blood as possible, and, through the kindness of Drs Aitken and Morrison, had it analyzed for acetone. The analysis was conducted with the greatest care, and a distillate was obtained which certainly had a slight ethereal or acetone-like odour, but which, when tested for acetone, gave indications of only the merest trace of its presence. It could not have been in large quantity, as the odour, although distinctly ethereal, was very faint. The odour throughout in this case was very much less evident than in the former, and had more of the vinegar or sour-beer taint than that of acetone. When the organs and the blood were kept for a day, the acetone-like odour became more apparent, especially when the vessel which contained the viscera was first opened. The volatile principle seemed then to escape, and had quite the character of some ethereal preparation.

In this case, viewed in the light of the former one, there is a

probability that the cause of death was really fat embolism, and that the production of acetone or other ethereal principle was merely an accident or a collateral product of some chemical decomposition. The lipæmia was so decided, and the quantity of acetone so minute, that it seems more natural to ascribe the symptoms to the former than to the latter. The comatose symptoms, indeed, bear a close resemblance to those caused by the gradual accumulation of carbonic acid in the blood. We know that where carbonic acid poisoning is slowly induced, there is not the same lividity of the surface which is noticed when the person dies of sudden suffocation, and the pallor which those who die from diabetic coma often present seems to bear out the analogy. We have noted, in the first case, that the blood in the lungs had a bright scarlet colour, and this was also observed in the second case. Under the circumstances this is what might be expected; for the air in such cases enters the chest freely, and no doubt oxygenates the blood present in the lung, or hyperoxygenates it, but the vessels being blocked by the accumulation of oil within their terminal branches, this hyperoxygenated blood cannot pass onwards. The bright red colour is in this way accounted for, and is similar to what one observes where artificial respiration has been kept up after death from chloroform poisoning. There is a free interchange of gases in the lung, but the oxygenated blood obstructed in its onward passage is found in the lung after death.

We have now submitted the cases and *post-mortem* observations which appeared to us to lead to the conclusion that the peculiar terminal dyspnœa and coma of diabetes are due to lipæmia and fat embolism, rather than to acetonæmia. The grounds of our opinion may be summed up as follows:—

1st, The lipæmic state of the blood present in all the cases known to us.

2d, The anatomical evidence of fat embola, chiefly in the minute pulmonary vessels and capillaries, and to a less extent in those of the kidneys and other organs.

3d, The entire similarity of the histological appearances in the lungs to those found in fatal fat embolism from fractured bones.

4th, The analogy in the symptoms of dyspnœa and coma in fat embolism from fracture as compared with the diabetic conditions. In regard to this point more precise information is desirable; nevertheless, in the cases of fat embolism from fractured bone, under our own observation, marked dyspnœa has been present, and we may refer to the clinical observations on fat embolism from fractured bones, by Professor Y. Czerny (*Berliner Klinische Wochenschrift*, 1 & 8 Nov. 1875), for a description of the symptoms, and more especially the marked dyspnœa and coma. The length of this paper has prevented us going more fully into detail on this point.

Fig. 1.

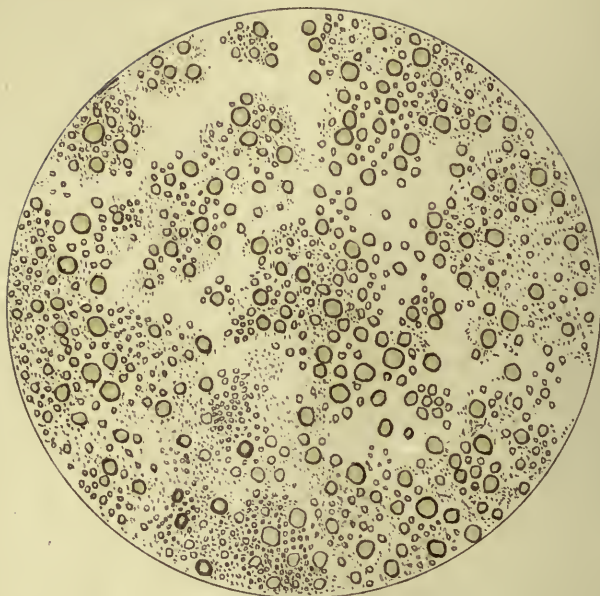


Fig. 2.

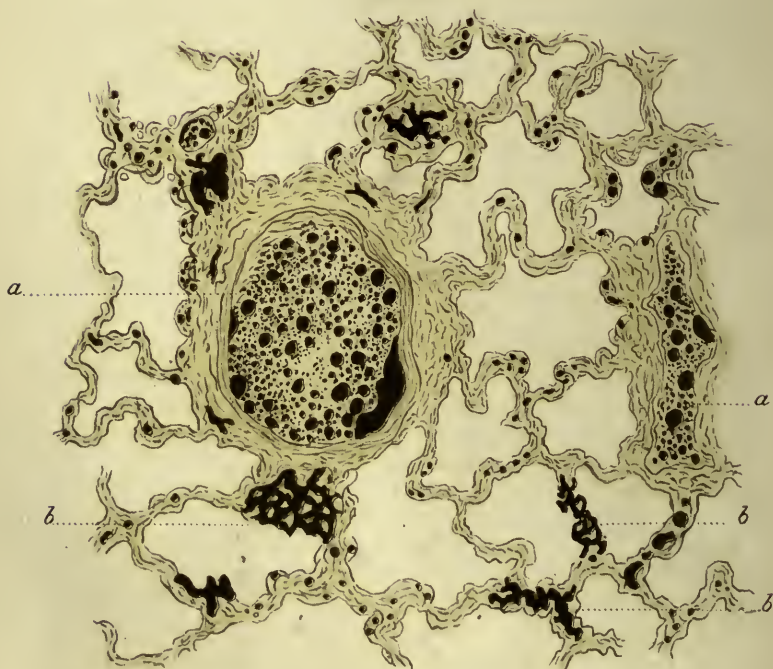


Fig. 3.



Fig. 4.



5th, The quantity of acetone found in the blood in diabetes seems too small to account for the fatal symptoms.

6th, Acetone added to blood does not produce either the naked-eye or microscopic appearance of lipæmia. In this respect our experiments entirely differ from those of Dr Foster. The milk-like appearance in our cases was always proved to be due to oil, both by microscopic examination and by the removal of the milky appearance by the action of ether, as well as by the staining with perosmic acid. Nothing identical with this can be produced by adding acetone to blood.

7th, The phenomena induced in animals (rabbits) by administration of acetone are similar to those of alcoholic intoxication, and the laboured breathing does not present the intensity of the severe diabetic dyspnœa.

8th, In animals poisoned with acetone the blood does not present any appearances, naked-eye or microscopic, like those of the peculiar blood of diabetes.

Had these fatal cases of diabetes not been of comparatively rare occurrence we should have waited for more experience before advancing the theory of fat embolism. As it is, we submit it to consideration in order that others may confirm or correct it. At all events, the lipæmic condition in diabetes, although long known, does not appear to us to have attracted the attention which it deserves. How is the fat produced? In what relation does it stand to the sugar and to the pathological chemistry of diabetes?

These are questions which have been rather avoided than discussed, yet they seem of importance both in regard to the pathology and to the treatment, dietetic and medicinal, of diabetes.

DESCRIPTION OF PLATES.

FIG. 1. Upper milk-white stratum of the blood $\times 300$ diams., shows numbers of oil globules varying in size, lying in a finely granular albuminoid precipitate.

FIG. 2. Section of the lung stained with perosmic acid $\times 350$ diams.

a. Pulmonary arteriole containing an embolon, consisting of oil globules lying in a granular substance. Some of the oil globules are seen spread out on the inner coat of the vessel and adhering to it.

b. Capillary plexuses on alveolar walls filled with oil.

FIG. 3. Section of kidney $\times 50$ diams. stained with perosmic acid and picrocarmine.

a. Vasa recta containing oil embola.

b. Straight tubules.

FIG. 4. Same section of kidney more highly magnified (300 diams.).

a. A vessel filled with granular matter and oil globules.

b. Oil globules blackened by the perosmic acid.

Part Second.

REVIEWS.

The Anatomy of the Joints of Man. By HENRY MORRIS, M.A.,
M.B. Lond., F.R.C.S.

MR MORRIS is favourably known to the profession by his able researches into the pathology of dislocations of the hip, and his reputation is not likely to suffer from this publication.

In his preface the author justifies the appearance of a new work on the Anatomy of the Joints in the following terms:—"It has hitherto been customary to describe, in the various text-books of anatomy, under the head of 'The Joints,' the ligaments and synovial membranes only, without giving any account of the bursæ and muscles in relation with them, or of the articular ends of the bones, and without any reference whatever, except in the case of the larger joints, to the arteries and nerves which supply, or to the movements which are permitted at, the articulations. The consequence of this has been that the student has had to look under one section for the ligaments, under another for the bones, under a third for the blood supply, and so on; but by the arrangement adopted in this treatise, all the various structures of a joint are brought under notice together, and thereby much loss of time and inconvenience will, it is hoped, be spared the reader."

The busy practitioner who desires to refresh his anatomical knowledge may rely upon finding in this work an accurate, complete, and systematic account of the various joints. There is, however, little that is new in the descriptions, and we observe that no reference is made to the views of different authorities on disputed points. The work is illustrated by upwards of forty lithographic plates, some coloured and others uncoloured. The uncoloured ones, as a whole, are executed with considerable artistic skill, although occasionally the shading is bad, as in Fig. 1, Plate xix., where the head of the humerus presents an appearance somewhat resembling a concave surface. Many of the coloured plates are spoiled by the crude colouring introduced, and some of them are apt to mislead by both the articular cartilage and ligaments being of the same colour.

Elements of Comparative Anatomy, by Carl Gegenbaur. Translated by F. JEFFREY BELL. Revised, with Preface, by E. RAY LANKESTER.

THIS work, which is an excellent English translation of Professor Gegenbaur's "Grundriss der Vergleichenden Anatomie," will be

very useful to advanced students of the subject, who do not read German.

Professor Lankester, in his preface, draws attention to the chief points in which Gegenbaur differs from English authorities, and gives a list of the sub-kingdoms according to the classifications adopted by Huxley (1869), by Gegenbaur in the present volume, and by himself in his lectures last year. The tentative nature of any attempt at a classification at the present time, and the difference of opinion which exists on this subject, are forcibly illustrated by an examination of these three lists. Of the eight sub-kingdoms recognised by Huxley, only four are retained by Gegenbaur and three by Lankester. Gegenbaur raises the Tunicata, formerly included by Huxley amongst the Molluscoida, to the dignity of a distinct sub-kingdom which he places between the Mollusca and Vertebrata; while Lankester goes a step further, and includes them amongst the Vertebrata.

Those examiners who attach great importance to students being well versed in classifications must have a hard time of it in keeping themselves up with the rapid changes in this department of zoology. Gegenbaur's work is divided into two parts, a general and a special. In the general part he gives a brief outline of the various tissues and organs of the animal kingdom; and in the special part each sub-kingdom is considered under a distinct section in the following order: first, a general review of the group, and a bibliography, and then a description of the form and relations of the various groups of organs met with. The only modern English textbooks that can be compared with it are the manuals of Huxley on the Invertebrata and Vertebrata, but they differ greatly in their scope and manner of treating the subject.

Huxley deals especially with animal morphology, while Gegenbaur's may be regarded as a work on comparative anatomy, properly so called. In the preface to his "Invertebrata" Huxley states that he has abstained from discussing questions of ætiology, not because he under-estimates their importance, or is insensible to the interest of the great problem of evolution, but because to his mind the growing tendency to mix up ætiological speculations with morphological generalization will, if unchecked, throw biology into confusion. On the other hand, Lankester in his preface writes, "the distinctive and weighty recommendation to this work is, that throughout and without reserve the doctrine of evolution appears as the living, moving investment of the dry bone of anatomical fact."

However useful this work may be in giving the student a philosophical view of the subject, he must not expect to find the careful descriptions of typical species which give Huxley's book a more practical turn.

The Journal of Anatomy and Physiology, Normal and Pathological.
Vol XIII. Part 2, Jan. 1879.

THE principal paper on human anatomy in this part is one by Mr W. Roger Williams on "The Anatomy of the Quadriceps extensor cruris." The writer maintains that of the two heads of the rectus femoris, the reflected or acetabular head is the main tendon, the straight or iliac head being nothing but an accessory band of condensed fascia. In the foetus, at the sixth month, only the reflected head can be distinguished, the straight cannot be discriminated from the fascia of the part. It is also asserted that the crureus is more readily separated from the vastus internus than from the vastus externus—a statement which we have verified, although most textbooks describe the vastus internus and crureus as one muscle.

A provisional report "On the Action of Anæsthetics," by a Committee appointed by the British Medical Association, and consisting of Professor M'Kendrick and Drs Coats and Ramsay, will be read with interest, especially as it considers the relative merits of ether and chloroform.

The Committee investigated the effect of chloroform on the respiration and on the heart. It soon became apparent to them that it had a most injurious effect upon the respiratory centre in dogs and rabbits. By pushing the chloroform until respiration was paralyzed, it could often be determined by auscultation that the heart's contractions continued after respiration had ceased. It is, however, especially important to notice, that they found even where the failure of respiration was more directly the cause of death, the heart was to some extent simultaneously affected, and in some cases failed, at least as soon as if not before respiration.

A frog was anæsthetized by chloroform, its heart was then exposed by cutting through the sternum in the middle line, and exposing it under a jar to the vapour of chloroform; it was found that the heart became rapidly weaker, until it ceased beating. In a similar experiment with ether the result was very different, the heart beating vigorously for a considerable time. Essentially similar results were obtained with warm-blooded animals in which the respiration was maintained artificially.

From these experiments the Committee came to the important practical conclusion that, "apart altogether from the respiratory centre, chloroform has a disastrous effect on the heart, while ether has no such effect."

The chief objection to ether is the tardiness of its action, and the Committee are engaged in testing various substances with a view to discover one that possesses the advantages of both, without their disadvantages. The most promising substances they have yet found are isobutyl chloride and ethidene dichloride.

The Journal contains several articles on Comparative Anatomy, and

Reports on Physiological Chemistry by Dr J. Graham Brown, Recent Physiological papers by Dr G. T. Beatson, and Recent Memoirs on the Anatomy of the Brain by Professor Turner and Dr Dodds.

The Hunterian Oration: Delivered at the Royal College of Surgeons of England, on the 14th of February 1879. By GEORGE MURRAY HUMPHRY, M.D., F.R.S. Macmillan & Co., 1878.

TWO years ago, Sir James Paget delivered an oration on the same theme so full of suggestive thought, carefully ascertained facts concerning Hunter, and eloquence of a high order, that Professor Humphry might have approached his task with reasonable anxiety. But we are glad to congratulate him on the excellent manner in which he has accomplished it, rendering what appeared a threadbare subject both fresh and interesting. Our space prevents us from entering into details; but we would characterize the oration as a valuable exposition of the important place which the great surgeon is destined to occupy for all time in the temple of fame, and also of the bright example which his life-work, and his museum, the tangible result of that work, hold out to succeeding generations. We are glad to find that one so entitled to give an opinion as Professor Humphry is fully alive to the great defects and drawbacks of our present system of professional teaching and examination, by which the student is under continuous temptation to make a toil of what should be a pleasure, and undergoes a prolonged process of *cram*, instead of being able to study his profession, as in former days, in a kindly, loving manner, bestowing his main attention on topics of chief importance. He denounces, we are also glad to observe, the whole fraternity of *vade mecum*s and *hand-books*, recommending, as we have often done in this Journal, the richer stores of professional literature of which these small books are but dry, condensed, and sapless products. We advise all our readers to purchase and study with attention this very sensible, spirited, and opportune contribution to the subject of medical education.

Les Eaux Minérales d'Auvergne: Le Mont-Dore, La Bourboule, Royat, Châtel-Guyon, Saint Nectaire, Châteauneuf, Chaudes-Aigues, etc. Par Le Docteur BOUCOMONT, Médecin-Consultant à Royat. Pp. 210. Deuxième Tirage. Delahaye et Cie.: Paris, 1879.

DR BOUCOMONT has produced a good and compact account of the mineral waters of Auvergne. The work is illustrated by numerous engravings of places, and a hydrological map, showing the princi-

pal thermal stations in Auvergne, taken from Dr Petit's book on the mineral waters of Puy-de-Dôme.

It is a pity that the author—following the lead of the late Professor Gubler—shows a paltry spirit of national partizanship in discussing his subject, forgetting that it belongs to the old and universal Republic of Medical Science, and not exclusively to the infant French Republic, still struggling in its swaddling bands. The issue of the late Franco-German contest made Gubler an intense hater of Germany, and set him to think how he could best assist in avenging the humiliation of Sedan, the loss of Alsace and Lorraine, and the other disastrous results of the war of 1870–71. He fancied that he might accomplish his object to a considerable extent by writing up the mineral springs of vanquished France, and writing down those of victorious Germany! He carried out his idea by teaching, in clinical lectures and medical journals, that Royat and Mont-Dore are better than Ems; that Châtel-Guyon excels Kissingen; and that, as a whole, the mineral waters of France are superior to those of Germany. In the same spirit Dr Boucomont thus concluded the preface to his volume, which is dated in July 1878, during the International Exhibition in Paris:—
 “Au moment où toute l'Europe est conviée à venir juger notre industrie et apprécier notre vitalité et notre courage, il est bon de lui montrer que nous n'avons rien à envier au sol étranger et que nous-n'avons qu'à faire connaître les richesses du nôtre pour affranchir les Français de ces vieilles traditions tracées par la mode plutôt que par la science et la raison.”

Fashion, stimulated and guided by interested advocacy, has, no doubt, unduly exalted the therapeutic virtues of some of the German waters; but, surely, it is neither by friendly fashion nor by Gublerian disparagement that truth-seeking physicians endeavour to estimate the value of remedial agents.

Lectures on State Medicine delivered before the Society of Apothecaries, May and June 1875. By F. S. B. F. DE CHAUMONT, M.D., F.R.C.S.E., Professor of Military Hygiene at the Army Medical School. London: Smith, Elder & Co.: Pp. 196.

Dangers to Health: A Pictorial Guide to Domestic Sanitary Defects. By T. PRIDGIN TEALE, M.A., Surgeon to the General Infirmary at Leeds. London: J. & A. Churchill, 1878.

Healthy Houses. By FLEEMING JENKIN, F.R.S., Professor of Engineering in the University of Edinburgh, with illustrative Plates. Edinburgh: David Douglas, 1878.

OWING to unforeseen circumstances, some of the works connected with public health noticed in the present number have been passed

over for a length of time, which, as they are works of merit, requires an apology from us to our readers and the authors.

Dr De Chaumont's lectures furnish an instance of the fact that those who are themselves the discoverers and leaders of thought in any subject, as a rule, prove the most interesting and successful teachers, and the Society of Apothecaries may well be congratulated upon these six lectures, which deal with the History of Sanitation during the last thirty years, General and Special Hygiene, Legal Enactments, Ventilation, Habitations, Disposal of the Dead and of Effete Matters. The Soil, Foods and Adulteration, Work, Prevention of Disease, Propagation of Disease, and the Method of using Statistics. Statistics are so important to the sanitarian that a word in their defence from a good mathematician like Dr De Chaumont may be quoted: "It has been contemptuously said that figures will prove anything; so they may to a fool or an ignoramus, or if false facts are registered. But statistics honestly collected cannot possibly lie; and the error is chiefly in the hasty or erroneous inferences drawn. It is a great pity that mathematical science is so much neglected by our profession and so poorly taught to the community in general. I do not think it is the best training for the mind, but it is of great value, and intelligently used would frequently save men from rushing into errors that confound themselves and confuse their fellow-creatures." We cordially recommend Dr De Chaumont's book to our readers, and promise them pleasure as well as profit from its perusal.

The knowledge that illness and death, in many cases, arise from faults in the construction of dwellings, has produced an extraordinary amount of denunciation of builders and plumbers by persons who have only the most shadowy ideas regarding the nature of the crimes attributed to the objects of their wrath. In the nature of things the speculative builder cannot expect to deal with the same purchaser twice, and consequently, apart from moral rectitude or the rare interference of sanitary authorities, he has no inducement to have other aim than to build houses that will sell, whether fit for habitation or not. With the plumber it is otherwise, and granting the ignorance of all but a few, and considering his peculiar trials and temptations, he is an honest man, anxious to do fair work, and, above all things, to please and keep his regular customers. He is, indeed, tempted to scamp by keen competition, and still more by the knowledge that his operations are a mystery to the householder, to whom examination of the work is repugnant, even in those cases when it is possible and everything is not hid from view. If to this we add that the plumber is not unfrequently called upon to carry out plans which he knows to be in glaring defiance of all sanitary rules, and to pursue his labours in the most awkward positions and impossible places, the wonder is that so many houses are habitable. It has long been felt that the true remedy for sanitary defects was increased

knowledge on the part of the householder and his medical adviser, and innumerable tracts and treatises have been published in the vain hope that the public would undertake the certain trouble of reading them in order to ward off uncertain disease. By a stroke of genius Mr Teale has pointed out the proper method of educating the public in the details of domestic sanitation. The idea of a pictorial atlas of defects seems to have dawned slowly upon Mr Teale himself, though now that it is shown to us it is more obvious than the discovery of America. An hour spent in examining this clever and amusing picture-book, which contains a clinical history of the defects to which drains are liable, will give more instruction to the general reader than a week spent in poring over treatises upon the subject. It is not too much to say that its advent marks an era in the education of the public in sanitary matters, and we confidently hope for the best results from its publication. In future editions we hope the author will keep to his plan and eschew the temptation to indicate any one means of correcting the faults shown. We had marked one or two little points where improvement seemed possible, but space fails to enter upon them, and we conclude with the expression of our gratification, that the happy idea of this atlas has emanated from a member of that profession to which is due almost every important step in sanitary science in the past, and which has proved its earnestness for the public good by work done, not merely without reward, but in the face of ridicule. We trust that every medical man who values the reputation of his profession in matters sanitary will do himself the pleasure of looking at Mr Teale's pictures.

The substance of part of Professor Fleeming Jenkin's little book is already familiar to our readers, having been communicated to the Medico-Chirurgical Society and published in this Journal. The book is mainly intended to set forth the advantages of Sanitary Protection Associations, and these, with some information upon such subjects as ventilation, warming, etc., are stated in a very clever and telling way. It must be gratifying to Professor Jenkin to know, that his efforts have not only led to the formation of the Edinburgh Sanitary Protection Association, which is doing such good work, but that associations in imitation have already begun operations in England and the United States.

Organic Philosophy; or, Man's True Place in Nature. Vol. V. *Organic Method.* By HUGH DOHERTY, M.D. London: Trübner & Co.: 1878.

DR HUGH DOHERTY is evidently a very learned physician, who seems quite at home in almost every department of philosophy. The work under review is the fifth of a series, the four previous volumes

having treated of Epicosmology, Ontology, and Biology. It would be very difficult for us to give any idea of the vast number of subjects introduced in this volume, and the eccentric manner in which some of them are handled. One picks up a good deal of information here and there upon matters connected with physiology and metaphysics, and we have a great deal of classification, which, with divisions and subdivisions, distinctions and definitions, would require a very powerful memory to keep hold of. The author aims at arranging acquired knowledge rather than making new discoveries; nevertheless, we are indebted to him for some original information, previously unknown to us, for example:—

“We may also observe that the nervous system is not the immediate link between soul and body. The oxygen gas contained in the blood forms the direct medium of connexion, while carbonic acid gases, chloroform, etc., displacing oxygen, may partially or entirely effect a separation between the sensitive soul and the material body.”

We suspect Dr Doherty ought to have lived, or perhaps did live, in the Middle Ages, when no doubt he animated the body of a distinguished professor of philosophy. People have long given up such speculations as swarm in the book, and are reproduced in the following passage:—

“The existence of man in the ‘natural world of life’ plays but a very small part in the scheme of nature, ‘but what of the existence of mankind in supernatural’ world of life and consciousness? Have we no data for investigative science in this direction?”

“Can we not find a cyclorithmic law of order for all degrees and kinds of vital evolution, as well as an algorithmic law of order for all kinds and degrees of complex organic unity?”

“How long do individuals live in the womb (or in the lymbic darkness of incarnation)? How long in the natural world, when life is not shortened by accident or by disease? How long in a conscious or unconscious state of resurrection after leaving the mortal body? How long in the invisible world after resurrection, before the descent again (as the rain of life) into this natural world? Do not invisible souls organize bodies *in utero*, as invisible vapours condense to form clouds, from which drops of water are rained down upon the earth again, as human bodies are brought forth from the cloudland of embryonic life?”

Dr Doherty gives an index of authors’ names, which must give the reader a very high idea of his erudition. The first name on the list is Abraham. Not being aware that this patriarch had ever written a book, we turn up the page indicated, where we find the following line:—“Before Abraham was, I am.”—*Bible*. The last-mentioned author on the long list is Zöllner, and on turning up to the page given, we learn that Sir W. Thompson’s theory, that the germs of organisms were conveyed to the earth in meteorites, was defended by M. Helmholtz against the strictures of M. Zöllner (in the weekly periodical, *Nature*, 14th January 1875).

American Health Primers. Edited by W. W. KEEN, M.D., Fellow of the College of Physicians, Philadelphia.

Hearing, and How to Keep it. By CHARLES H. BURNETT, M.D., Philadelphia.

Long Life, and How to Reach it. By J. G. RICHARDSON, M.D., Philadelphia.

Lindsay & Blackiston, Publishers, 25 South Sixth Street, Philadelphia. 50 cents each volume.

THE above works are the first beginnings of a series of small volumes on subjects pertaining to sanitary science and the preservation of health, written by American authors of established reputation, selected with reference to their special knowledge of the subject from previous study, or as private and public teachers. The subjects selected are of vital and practical importance, and are treated in as popular a style as is consistent with their nature, technicalities of language being avoided. Each volume will be illustrated by engravings, when the text can thus be more fully explained to those not heretofore familiar with the structure or functions of the body.

This work of Dr Burnett's, to which we shall only refer here, is an excellent little work, perhaps its only fault, if it has one, is that it is too full. The book is in three parts—on the anatomy and physiology of the ear, the chief diseases and injuries of the ear, and the *avoidance* of their improper treatment, and on the general hygiene of the ear.

Concerning the chief diseases of the ear, and the avoidance of their improper treatment, Dr Burnett says, in respect to the injuries and diseases of the drum-head, p. 67:—"The drum-head, as might be supposed from its thinness and comparatively exposed position, is liable to injuries, producing in it perforation, rupture, and inflammation. A perforation or rupture in this delicate membrane is not as *directly* injurious either to hearing or to health as is generally supposed. In some respects a simple perforation in the drumhead is of no consequence, as it will heal rapidly in a healthy membrane. Indeed, some forms of deafness are cured by a perforation in the drum-head.

"The first great danger in all cases of accidental perforation in the drum-head is, that a force productive of such a fissure in it may, by concussion, affect the deeper nerve structure of the ear. The next evil that may directly attend a perforation in the drum-head is the exposure of the delicate mucous membrane of the drum cavity which necessarily follows such an opening in this membrane, which forms the outer wall of the drum-cavity.

"The most common forces which produce this injury in the drum-head are concussions in the form of unexpected explosions, or a box on the ear.

"The explosive force comes on the drum-head either so suddenly that the membrane is not prepared for it, or it is so powerful, and the membrane so delicate, perhaps already weakened by disease, that the membrane is unable to resist it. If the Eustachian tube is temporarily closed, the drum-membrane would be all the more likely to be burst.

"A word of caution here both to physician and patient. In all such cases of either supposed or ascertained accidental rupture of the membrane, *nothing should be put into the ear*. The rupture in the drum connects the outer ear with the drum-cavity, and any "drops" now put into the auditory canal will pass directly into the drum cavity, and there *set up inflammation*. In all such cases, simply protect the mouth of the canal with a little dry cotton, and it will be found that in the vast majority of cases, perhaps in all, the ruptured drum-head will heal, and if the nerve of hearing has not been injured by the concussion, which has produced the perforation in the membrane, the hearing will not have been injured. It is altogether different when the rupture of the drum-head has been produced by disease, and when a running from the ear continues. The drops will then do more good the further into the ear they penetrate.

"Another force productive of rupture of the drum-head, quite common among brutal people, is a 'box on the ear.' This is inflicted not only upon children, but the writer observed an instance of such an injury to the drum in a man, produced by a blow over the ear, given in rude play. The *treatment* of such cases is the same as in the above. These instances of injury from a blow by the hand often come into court, and the plaintiff is usually regarded in too much the light of a greatly injured person, simply because the 'drum is perforated.'"

From this extract, our readers may judge of the excellency of the whole book, and whether or not we are justified in now recommending it to country practitioners, and to country people generally, who are out of the reach of special practitioners in ear diseases.

A Manual of Scientific Terms: Pronouncing, Etymological, and Explanatory; chiefly comprising Terms in Botany, Natural History, Anatomy, Medicine, and Veterinary Science; with an Appendix of Specific Names designed for the Use of Junior Medical Students and others studying one or other of these Sciences. By Rev. JAMES STORMONTH, Author of the "Etymological and Pronouncing Dictionary of the English Language," &c. Edinburgh: Maclachlan & Stewart. London: Simpkin, Marshall, & Co. 1879.

WE are of opinion that this work—unpretentious, yet replete with useful, precise, and accurate information—will commend itself to all

who give it a candid and unprejudiced examination. We have tested it pretty extensively, and have come to the conclusion that many others besides junior medical students will derive great benefit from its carefully prepared and reliable statements. The author, whose previous learned works have already done great service in the cause of education, will not only add to his reputation by this manual, but will greatly lighten the difficulties of many overburthened students, whose preliminary education has perhaps been defective or has begun to fade from their memories. Certain we are of this, that a diligent, conscientious young man, to whom various branches of medical science, when suddenly and simultaneously presented to his mind with bewildering effect, may have many obscurities cleared away by referring day by day as these occur to Mr Stormonth's pages. It may strengthen our representation in favour of the book, that the more strictly medical information has been carefully revised and edited by two such competent physicians as Dr George W. Balfour of this city, and Dr Alexander Morison of Canonbury, London.

A very useful and important feature of the book is given by way of appendix, viz., a detailed view of the abbreviations used by medical men in writing prescriptions—a view, as far as we know, not to be had nearly so satisfactory anywhere else.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LVIII.—MEETING VII.

Wednesday, 2d April 1879.—PROFESSOR SANDERS, *President, in the Chair.*

I. *Mr D. J. Hamilton* showed a SECTION OF THE LUNG from Mr Bell's patient, in which there was the most extensive fat embolism. The oil was chiefly in long masses, running from the smallest arteries into the capillaries, and forming a complete injection of their ramifications. It adhered closely to their walls, so that no blood could possibly circulate through them. It gave all the reactions of oil, in blackening with perosmic acid, and being soluble in ether. There was, in addition, very considerable pneumonic exudation into the air-vesicles, probably of the same duration as the fat embolisms, and apparently caused by them. The lower lobes were those in which the pneumonic exudation was most marked.

The following is Mr Bell's case referred to by Dr Hamilton:—

William Harrison, æt. 40, residing at Midcalder, a labourer, was admitted to Ward 11 S on Thursday, March 27th, at five o'clock in the afternoon, for a fracture of the upper third of the femur.

History of Accident.—Patient was in charge of a horse and van in the vicinity of the Waverley Station, and was standing at the horse's head at the time a traction engine was passing, when the horse took fright and bolted, knocked him down, and the wheel of the van, which was loaded, and weighing about five or six tons, passed over his left thigh.

State on Admission.—Patient was passing urine and fæces involuntarily, was hardly sensible, and smelt pretty strongly of alcohol. The limb was greatly swollen at the seat of fracture, and the distortion was well marked.

On examining the limb, a very bad comminuted fracture was made out, but the skin was unbroken. No pulsation could be felt of the anterior or posterior tibial arteries, and the foot was very cold.

Patient was put to bed, and the limb put up in American extension method, hot fomentations being applied to the seat of effusion. He continued very restless during that evening, tossing the free limb about a great deal.

28th. — Patient had passed a restless night; incontinence of urine and fæces continued; pupils irregular; respiration very rapid. Effusion in thigh less. Pulse 140; temperature 103°; respiration 42.

29th. — Respiration markedly blowing in character. Right pupil dilated. Left contracted. Incontinence of urine and fæces. No nourishment taken, except a few spoonfuls of milk at lengthened intervals. Was insensible.

M. Pulse 140 Temperature 102°·8 Respirations 42

E. „ 144 „ 102°·8 „ 44

30th.—Very restless all night. Taking no food. Pupils still irregular. Pulse and respiration still rapid. Breathing stertorous in character.

Evening.—Respiration very laboured. Cold sweat on forehead. Quite insensible. Taking no nourishment. Effusion into thigh diminished a great deal. Foot feels warmer. Patient lying with mouth open, arms crossed on chest, and hands clenched. Respiration changes in character, now and then rapid, then suddenly slowing, stops for a second or more, then goes on again.

M. Pulse 160 Temperature 101·4 Respirations 48

E. „ 164 „ 102·2 „ 48

31st. — Very restless. Evidently sinking fast, 10·30 A.M.
11·30 A.M.—Patient died.

The foregoing careful report by Dr Atkinson, my house-surgeon, describes the case:—From the first I took a most serious view of his case, and from the second time that I saw him (29th) I was

driven by a process of exclusion to the diagnosis of fat embolism. On the 28th alcohol might be still masking the symptoms. After this neither shock, nor head injury, nor alcohol, nor septicæmia, nor impending gangrene could explain the symptoms; and with the knowledge that the fracture was severe and probably comminuted, I fell back on the diagnosis of fat embolism, which was so fully made out in the autopsy.

II. *Dr Galt*, from China, showed—(1), a CAST OF A LADY'S FOOT which had undergone the usual great distortion enforced on ladies of rank in China. (2), the APPARATUS used in China for smoking opium.

III. *Surgeon-Major Black* then gave an account of a visit to the MILITARY BARRACKS AND HOSPITALS OF TOURS.

The present French Government has now adopted a fixed system for military barracks for the whole country, after extensive inquiry and careful consideration of a variety of plans. The *Nouvelles Casernes* at Tours have been built on this system, and comprise cavalry and infantry, and engineers and artillery barracks, and consist of blocks of buildings four stories high, contained in quadrilateral enclosures, round the walls of which, inside, are disposed the accessory buildings of guard-rooms, orderly-rooms, kitchens, stables, canteen, latrines, ablution, prisons, etc. The ground stories of the barracks are used as offices, workshops, and store-rooms, the two next upper stories for men's rooms, and the roof-flats for all casualties, as recruits, reserves, discharges, etc. There were no internal corridors in the buildings, no fire-places, but stoves were inserted temporarily in the winter in the rooms; no scientific system of ventilation, except by cross windows opened; no system of underground drainage, as this was all superficial in the grounds; no sewerage, as the refuse and excreta were removed daily by contractors. There are no officers' quarters or mess-rooms, except for the adjutant-major. The kitchens were neat and clean, and simply furnished, had complete scientific iron cooking-ranges, fitted up in the middle of the room, with ascending flue, for boiling, roasting, baking, and steaming; and there were no fire-places, grates, or bricked boilers. The ablution-rooms were fitted with rows of taps and troughs along the walls, and the laundry had the same, but with hot water added, and a drying-chamber attached; and all had stone tables in the middles. The latrines had compartments all round the sides of the walls, like one sees at a railway station, for use of urination and defecation in separate sheds, and from which the material was removed every night. The cavalry stables were in separate blocks from the men's barracks and from the forage stores and harness rooms, and were fitted up with separate but movable stalls, separate hay-rack, corn and water bins. The drainage was all superficial, and led from each stall, down the sides of the different cross passages, to the outside of the buildings, where the manure was gathered and carted away.

The riding-school was a magnificent building, with wainscotted walls, semicircular wall lights, louvered roof, sand and sawdust ground, band-gallery, and vestibule and offices. The gymnastic apparatus had as yet only temporary accommodation in the open square, but it was to get a shed for performance under shelter, where alone it is appreciated by the soldier there as well as here. There were also added, a most important part of the plan, separate transport buildings for the infantry, provided with stabling, wagon-shed, and forage and harness rooms, situated in the corners of the quadrangles. This will enable the regiments of the line to march off at short notice, without the aid of any other department, and to carry their own baggage and supplies with them. The barracks were also provided with a casualty or temporary hospital for daily sick and accidents, and with requisite staff; but all the permanent sick were removed to the general military hospital in Tours. The *Hospice Général* at Tours was on an extensive scale, enclosed in a walled park, had accommodation for 1000 beds, included military and civil departments, medical and surgical, incurables, lunatics, maternity, hydropathic, venereal, etc. In the park were also the medical school and museum, laundries, fruit and kitchen gardens, and administrative and official residences and offices, and the squares were nicely laid out in ornamental shrubbery, flowers, trees, seats, and fountains. The noticeable features in the constructive arrangements were the separateness of the different departments in different sections or buildings, and the entrance to them by separate doors and lobbies from the outside. There were but few corridors, except in the old buildings. Ventilation was chiefly carried on by open cross windows. The floors were all waxed, the walls of the female wards cemented. The bedsteads for women were fitted with curtains all round. The plan of construction was in squares, or parallelograms of long, narrow buildings, and not the pavilion system, as now being adopted in this country for hospitals. The hydropathic apparatus was of the completest kind, and included hot and cold and shower baths, douches of all sorts, local and general, vapour and medicated steam baths, for ablutionary and medical purposes. The kitchens, of course, were fitted up with the best of scientific apparatus for cooking by stove and steam, and the laundries were also provided with mechanical apparatus worked by steam, for washing, and drying, and mangling, and disinfecting patients' clothing. The military hospital had a separate square to itself, and the buildings were old, and the rooms had low ceilings, but were all clean, neat, and it was provided with a daily guard and sentries from the garrison. The attendance and nursing on the soldiers was performed by the same body of trained female and male servants as belonged to the civil departments, and the medical treatment was superintended by the general physicians and surgeons, and not by the army medical officers who were attached to the barracks. The rationing of the

troops in barracks comprised two meals per diem, about 10 A.M. déjeuner, and about 5 P.M. dinner, of some boiled or baked meat, with soup and vegetables at each; and coffee or cocoa were issued only in the mornings previous to some long march or exercises. The French soldier prefers a boiled diet with soup to the roasted diet with potatoes so much liked by the British soldier, a difference probably due partly to differences in the nature of the liquors they use to drink, and partly also due to climatic reasons. The evening meal or supper called "tea" in British garrisons the French soldier provides for himself when he is allowed out of barracks in the town on leave in the evenings at the various cabarets and cafés. There were no school-rooms for soldiers and children as in our barracks, nor reading and recreation rooms, except billiards for the non-commissioned officers' mess-rooms. Private soldiers are now supposed, under the short service system, to need no primary instruction, as they would get it at their schools in their villages and towns everywhere, and at all ages, and when in garrison they can always see the newspapers and periodicals of all sorts at the cafés and cabarets of even humble degree, where are also the means of playing billiards, etc., available at all times. There were, lastly, no married soldiers' quarters, as in our garrisons, and no women or children were to be seen moving about inside the squares, as these all lodge outside in the town, and are not recognised as dependent on the Government for maintenance.

The President said the Society felt indebted to Surgeon-Major Black for his interesting account. Simplicity seemed the chief feature in the arrangements.

Dr A. G. Miller thanked Surgeon-Major Black for his kindness in describing the sanitary arrangements in the Tours barracks. The absence of drains and the daily removal of excreta was a method specially suitable for ignorant people, as nothing could go wrong.

IV. *Dr Edward Henderson* then read cases of SUDDEN DEATH FROM ANEURISM BY RUPTURE, which appears at p. 1093, vol. xxiv. of this Journal.

Dr Cadell had listened with much pleasure to *Dr Henderson's* interesting paper, and thought he deserved their thanks for taking so much trouble during his short holiday. He was interested in the etiology of aneurism and specially as to the influence of syphilis. He was inclined to think that syphilis was credited with more share in its production than it deserved. It had been shown, however, to cause placental and brain disease by thickening the intima of the blood-vessels; but it had not yet been made out if there was any gummatous degeneration in the larger vessels. British army-surgeons put down syphilis as the chief cause of aneurism. So far as his experience went, he thought alcoholism a more powerful cause of weakening of the vessels.

Dr Blair Cunynghame thought the immaterial symptoms was a

peculiar clinical feature in the cases. It showed them how careful they should be in investigating their apparently trivial complaints.

Dr Wyllie thought that in regard to the causation of aneurism the matter stood thus: viz., any condition poisoning the blood permanently would act on the vessels and produce disease. Alcohol was the most common one, but gout, rheumatism, or syphilis would act likewise, when we considered that the new formations were inflammatory, then in syphilis we have a common cause of vascular disease. Our special pleasure had been listening to the graphic account *Dr Henderson* gave of the sudden death in some of his cases; and the graphic picture of deadly pallor or lividity *Dr Henderson* had drawn, would not easily fade from their recollection.

Dr A. G. Miller had listened with great pleasure to the communication. He was specially interested in the cause of aneurism, as *Dr Henderson* had rightly said many had syphilis, while only few had aneurism. The same could be said of alcohol; but their combination, as in most of *Dr Henderson's* cases, might account for the frequency of aneurism in his experience. He wished to know if *Dr Henderson* had found excessive sexual indulgence an important factor in causing aneurism.

Dr P. D. Handyside asked if the observation of *Arnold of Heidelberg* had been confirmed in regard to the atheromatous degeneration in an artery being uniformly seated not in any one of the three laminae of its inner coat, but, according to analogy, in the muscular coat, from off which the entire inner coat, quite pellucid, can be torn off.

Dr B. C. Waller, in answer to *Dr Handyside's* question, described the structure of the inner coat of an artery as made up from within outwards of (1) endothelium, (2) a connective tissue layer, and (3) the fenestrated membrane of *Henle*. Inflammation and fatty degeneration in the second layer was the pathology of atheroma. The only lesion it could be confounded with, was fatty degeneration in the epithelial lining.

Surgeon-Major Black thought that observations might be made in hospitals as to the physical conditions under which rupture of an aneurism took place, such as increase of blood-pressure, of venous obstruction, of arterial rigidity, etc., disturbing the balance of normal circulation of the blood.

The *President* thought the paper exceedingly valuable and interesting. The great interest in the cases was the large proportion of deaths from rupture. He had had large experience of aneurisms in Edinburgh, and had found as his experience that deaths from exhaustion and pressure were more common than those from rupture. The remarkable feature in many of them was the absence of all leading symptoms pointing to aneurism. They might consider thoracic aneurisms as divisible into three great groups, viz., those in which there were physical signs, those in which we had symptoms such as rheumatic pains, etc., and those with neither signs nor

symptoms, *e. g.*, small aneurisms within the pericardium. One interesting feature in Dr Henderson's cases was the congestion of the face in rupture with the pericardium, and the paleness when the rupture took place into the pleural cavity. In one case of rupture into pericardium, however, there was paleness. Dr Henderson's facts in regard to these were valuable.

Dr Henderson, in reply, thanked the members for the kind manner in which they had received his paper. He was unable to give any information as to sexual excesses on the part of his patients, in answer to Dr A. G. Miller's question.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION XXXVIII.—MEETING VIII.

Wednesday, 19th March 1879.—Dr WILSON, *President, in the Chair.*

Mr J. Douglas Watt, M.B., Dr D. Greig, Mr Thomas Marshall, M.B., Dr Abraham Wallace, Mr J. R. Hamilton, M.B., were admitted Ordinary Fellows of the Society.

I. *Dr James Young* exhibited an oblong PLACENTA of irregular shape $12\frac{1}{2}$ inches by 5 inches broad.

II. *Dr Wilson* showed a PLACENTA, with commencing hydatigenous degenerations, from a two months' abortion.

III. *Professor Simpson* exhibited a pair of SIMPSON'S FORCEPS, to which he had fitted a Tarnier's traction rod upon the back part of the fenestrum of each blade. The handles were so altered with a notch and bar and screw attached, as to enable the operator to consolidate the forceps before proceeding to retract by tightening the screw to the necessary extent.

IV. *Dr Allan Jamieson* read a paper on the PREVENTION OF MAMMARY ABSCESS, which appeared at p. 1083, vol. xxiv. of this Journal.

Dr Keiller thought the subject interesting and important. Fissures of the nipple and mammary abscesses were undoubtedly common. He attached importance to previous preparation of the nipple and breast in the prospect of delivery, but at the same time observed that caution should be used in whatever means were adopted, as it was possible to irritate the breast, and even reflexly to excite uterine contraction by touching the nipple too much. Hardening lotions with spirit or brandy might be used, or emollient or soft rubbing, as the case might require. He considered that fissures of the nipple were too often induced by injudicious pressure on the nipple by tight clothing. To prevent this he referred to a kind of shield with a hole in it, to allow the nipple to rest in, introduced by Mr Sidey. He agreed in the

view expressed in the paper now read, to prevent mammary inflammations terminating in abscesses, is to prevent an immense amount of bodily and mental suffering at a time of weakness and constitutional strain already sorely tried, and therefore "prevention is better than cure" in most of the cases referred to.

Professor Simpson commended Dr Jamieson's paper. The subject was one of interest. He was struck with the great frequency of left mammary abscess as remarked on by Dr Jamieson, and he thought the observation was correct. One breast was usually more functionally active than the other. Dr Sidey's nipple-protector he had found of service, or a modification of it, with a thinner plate made of guttapercha. A Wandsborough shield with the end cut off it answered the same purpose.

Dr Charles Bell had listened with pleasure to the paper. In his experience, such was the delicacy of ladies that they shrunk from receiving advice about the breasts or nipples before delivery. The left breast, he thought, was usually larger than the right. Women generally preferred to suckle with the left breast. For cracked nipples a simple poultice was useful, followed by the application of alum. He did not think that a sunken condition of the nipple was always the cause of sores. He thought the child should be applied soon to the breast after delivery, and mentioned the case of a patient lately in which delay in doing so had resulted in threatened abscess.

Dr James Young could not agree with Dr Charles Bell as to the difficulty in getting patients to receive advice in regard to the preparation of the nipples in view of nursing. Young married ladies could always be approached by the mother or nurse, and advice given, which he regarded as of the utmost importance, especially in primiparous patients. When the nipples were chapped, the best application was the lotion (their names are legion) of the late Dr Macdougall of Galashiels.

Dr Napier mentioned the use of a nipple shield of lead, which he had found of service. Quinine had been suggested by some as a prophylactic in mammary abscess.

Dr Underhill thought Dr Jamieson did not lay sufficient stress on the constitutional conditions which predisposed to mammary abscess. He referred to a case in which a primipara who made no attempt to nurse had abscesses in both breasts. This, however, appeared to be a rare occurrence.

Dr James Carmichael alluded to two cases of superficial small abscess in the neighbourhood of the nipple he had lately met with. In both of them the milk spontaneously left the breast after the abscess had discharged, the other breast doing the work of both. He had met with many similar cases in the course of practice, and was always struck with the readiness, so to speak, with which one breast could discharge not only its own duty, but that of the other when called upon to do so.

Dr Jamieson thanked the Society for the reception given to his paper. He approved of applying the child in all cases soon after delivery. As to *Dr Bell's* objection to approach patients regarding preventive measures, he thought there could be no difficulty if it was done in a proper manner.

V. *Professor Simpson* read notes of a case of LABOUR, obstructed by dorsal displacement of the arm (which appears at page 961, vol. xxiv. of this Journal).

Dr Keiller remembered Sir James Simpson's first case. This complication almost always occurred in multiparous cases, induced by feeble and irregular contraction. It was difficult to diagnose by ordinary digital examination, and therefore when undue and unaccountable delay occurred in the progress of the case he did not hesitate to examine manually. Sir James Simpson delivered his first case by version. He recommended the administration of chloroform when in doubt about diagnosis, followed by the introduction of the hand, which was easily done if the accoucheur's hand was not too large. In this way he had managed to get the arm pushed up in the interval of a pain although turning was usually required.

Dr Kirk Duneanson mentioned that one of *Dr Macdonald's* cases had occurred in his dispensary practice when a student. The forceps had been applied without bringing down the arm, and great difficulty experienced in extraction. After the arm had been brought down the forceps were reapplied, and extraction easily accomplished.

Dr P. A. Young mentioned a case of arm displacement which had occurred in his practice. Head was in the left occipito-anterior position, arm was down and spread over occiput, and cord prolapsed. He had left the patient for a short time to procure chloroform, and before his return delivery was spontaneously effected. The child was alive.

VI. *Dr Napier* read notes of a peculiar MIDWIFERY CASE.

Dr Keiller thought the chief peculiarity in this case was the position of the forceps as described by *Dr Napier*. The grasp of the applied instrument (one blade of which as shown by *Dr Napier* encircled the axilla of the child, and through which the required traction had been used) was a most unusual one and not easily accounted for; a probable explanation of the mystery in this case seemed to be that of the child's arm getting so displaced as to be within the reach and the grasp of the specially applied blade, which had been pushed up not only over the side of the head, but possibly over the displaced and ultimately included arm.

Professor Simpson thought the position of the forceps due to prematurity of the child.

Dr Peel Ritchie thought such a position of the forceps would not likely have occurred had the curved instrument been used. An argument in its favour might therefore be deduced.

Part Fourth.

PERISCOPE.

MONTHLY REPORT OF THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Edinburgh School of Medicine, etc., etc.

CHLORAL AS A REVULSIVE (*Bulletin de Thérap.*).—Dr Peyrand states that chloral made into a mass with tragacanth, spread on paper or cloth, and applied to the skin, will produce a blister without pain. Applied as a powder on cotton it causes burning pain. By the former method a portion is absorbed and sleep produced. Its action is not quite as certain as that of cantharides, but as a mild revulsive and agreeable vesicant its action is very agreeable.—*Chicago Medical Journal and Examiner*, May 1879.

BAPTISIA TINCTORIA IN TYPHOID FEVER.—At the annual meeting of the New York State Medical Society (*Boston Medical and Surgical Journal*, 27th February 1879), a paper read by Dr Lawrence Johnson of New York, on the action of baptisia tinctoria in typhoid fever, may be summed up as follows:—Baptisia tinctoria, although formerly believed to possess anti-septic powers, rendering it useful in diseases having a tendency to putrescence, has of late fallen into utter neglect with the regular profession. It was to test its value in typhoid fever that the experiments recorded were made. The preparation used was a tincture of the root, and it was administered in small doses (from one to five drops) at intervals of from one hour to three hours. The ordinary measures of treatment—such as cool spongings, milk diet, and stimulants, when required—were not neglected, and casual indications were promptly met and appropriately treated. Careful records of pulse and temperature were kept and shown in tables. Of the seven cases whose histories were detailed, three at least had at the beginning symptoms betokening attacks of severity. The pulse, temperature, and general condition of these patients left no room for doubt upon the point, yet the improvement under treatment was remarkable. In general, it may be stated that the cases, when treatment was well under way, were characterized by lack of symptoms sufficiently grave to occasion anxiety. There was a marked absence of delirium, and comparatively little diarrhoea, though at the beginning, in two or three of the cases, there were very troublesome features. The temperature seemed to be reduced by the drug; and in one case, where the morning temperature was

as high as 106° F., when baptisia was employed for the first time, it never reached that point again, while the patient was fully convalescent in ten days. All the patients made good and comparatively quick recoveries. Taken altogether, although the results obtained in such a small number of cases could not, of course, be considered conclusive, they appeared to establish a certain relation of cause and effect between the drug and the favourable course of the disease. The evidence on this point Dr Johnson regarded as sufficient at least to encourage further trials. —*British Medical Journal*, 17th May 1879.

CONCERNING PLUMBIC NITRATE (*Med. and Surg. Reporter*).—Dr Marsh of Louisiana some years ago called attention to the great value of plumbic nitrate in many skin affections and erosions. Recently, an Italian, Dr Galbetti, has added his testimony as to its merits. He stated that he has cured three cases of epithelioma by dusting the powder over the affected part, recovery taking place after four or five applications. Two obstinate ulcers of the foot, which had proved rebellious to other treatment, quickly recovered after similar applications. Dr Canzetti has recently recommended the use of this salt also in onychia maligna. —*Chicago Medical Journal and Examiner*, May 1879.

A NEW DISINFECTANT (*Lyon Médical*).—Under this title Dr John Day of Australia recommends (*Alger Médical*) for use in general hospitals and for destroying contagion germs, a mixture of one part rectified essence of turpentine and seven parts of benzine, with five drops of essence of verbena to the ounce of the mixture. Its disinfectant properties are due to its capability of absorbing oxygen and converting it into ozone. Furniture, clothing, books, etc., can be disinfected with it without injury, and whether it be applied to a porous or non-absorbing surface, its action persists indefinitely. It can be applied with a sponge or a brush, or an object be immersed in it. One can convince himself of its vigour of action at any time by dropping some solution of iodide of potassium on the substances thus treated; decomposition of the salt occurs in the presence of ozone, and the characteristics of free iodine are easily recognised. —*Chicago Medical Journal and Examiner*, May 1879.

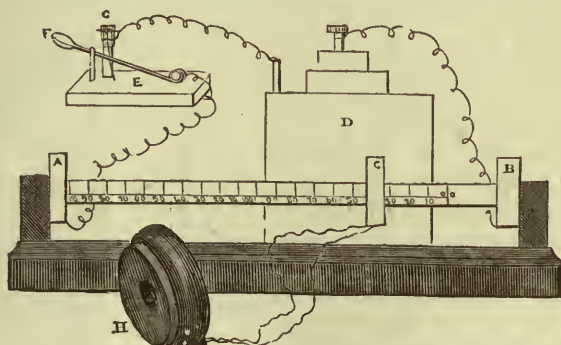
THE VALUE OF NUTRITIVE ENEMATA.—A Parisian correspondent reports that a discussion took place at the Société de Thérapeutique on the value of nutrient enemata. Basing his opinion on MM. Carville and Bochefontaine's experiments on dogs, which show that when food is introduced by the rectum only in the form of bouillon, the animals survive no longer than when water alone is injected. M. Dujardin-Beaumetz maintains that feeding by the bowels is a delusion. If, as is no doubt the case, patients who receive nourishment by no other portal do live for a considerable

time, this is no proof that the intestine absorbs what is introduced. Hysterical subjects and those suffering from cancer in the cardia vomit all they swallow, and yet continue to exist notwithstanding. These views have met with much opposition; it was objected that what might be true of the dog did not necessarily follow in man, and most of the speakers who took part in the debate quoted cases tending to prove the efficiency of this way of feeding.—*Medical and Surgical Reporter*, 10th May 1879.

AURAL PERISCOPE.

By J. J. KIRK DUNCANSON, M.D., C.M., F.R.C.P., and F.R.S., Edinburgh, Surgeon to the Ear Dispensary, 6 Cambridge Street, Lothian Road; Assist.-Surgeon, Eye Infirmary; Lecturer on Diseases of the Ear, Edinburgh School of Medicine.

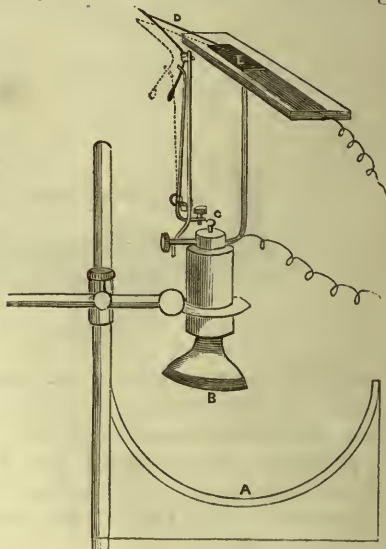
IN a recent paper read before the Royal Society by B. W. Richardson, he described a wonderful new instrument devised by Professor Hughes. This instrument is associated with a microphone and a telephone, indeed it would have been impossible without them. It has been christened the audiometer, and will no doubt become an indispensable help both to the aurist and general practitioner. The fact that an electric current traversing a coil of wire will induce another current in a separate coil placed near it has been constantly brought home to us of late months through accounts of the various electric light machines. It is this principle of induction upon which Professor Hughes depends for the beautiful instrument which he has just given to the world. A B are two



coils of wire fixed on a bar of wood, which has described upon it a scale which divides it into 200 parts. C is another coil sliding upon the same bar, and which can therefore be placed at varying distances between A and B. These two fixed coils are in connexion by a wire passing beneath the instrument, and they are also in circuit with the battery D. It must also be noticed that the wire from A to D is intercepted by the microphone,

or more properly by the microphonic key E. This key will require a word of explanation. The upright G carries a vertical needle, which is roughly suspended to it by a cross-piece of wire working in two little brass cheeks. A brass wire bent into a spring, and with a button of sealing-wax F at its end for the finger of the operator, completes this microphonic key. The noise of the wire spring (each time it is depressed by the finger), grating against the vertical needle, is, of course, magnified into loudness by means of an attached telephone. Edison's carbon telephone (H) is the instrument which has been selected for the audiometer. It will be noticed that it is in connexion with the coil C, and that the sounds heard by its agency must be due to induced currents in that coil, for it has no direct connexion with either battery or microphone. By making the coil A to contain a very much larger quantity of wire than B, a zero point, where no sound can be detected by the most perfect ear, has been marked near the latter coil. By placing the telephone at the ear of a deaf person, it is possible, by moving the key and adjusting the movable coil upon the scale, to test the amount of hearing which he possesses, that is, of course, supposing him to be capable of defining a sound at all. The importance of this instrument both in registering the progress of a case, or for testing the powers of candidates for appointments where good hearing is a *sine qua non*, cannot be over-estimated. Dr Richardson has already found it most useful in his practice, and more especially in some cases where artificial tympanums have been resorted to. In one case, where a patient's ear could only detect a sound up to 110° on the scale of the audiometer, the artificial drum gave him an immediate gain down to 60° . It was long ago prophesied that the microphone would be of great use to mankind, and we are glad to find that one of its first applications is towards the alleviation of the terrible malady of deafness. Both the medical profession and the public generally must therefore heartily thank Professor Hughes for the audiometer.

Another wonderful outcome of the microphone is due to the ingenuity of Dr Richardson himself. Our readers are most of them aware that an instrument for registering diagrams of pulse movements, called the sphygmograph, has for some years been in use. Fitted upon the patient's wrist, the needle of this instrument will



trace a series of waves upon a slip of smoked glass which is made to travel beneath it. Dr Richardson causes this needle to traverse a small plate of carbon which is in connexion with a battery, a telephone being placed in circuit. In the result, the sound of a man's pulse is heard all over a large room. In the accompanying figure, A is the cradle which holds the patient's wrist, and B an india-rubber pad which presses upon the pulse. This pad is connected by a spring with the button G, which consequently rises and falls by the action of the pulse. The movement is communicated to a bent lever holding the needle D, which traverses the plate of carbon at E. The dotted line shows the position which the needle and lever assume at each upward movement of the button G. This instrument is, we believe, considered by Dr Richardson to be the most delicate yet produced for detecting disease of the heart. It is evident that by its aid a diagnosis could be made, even though the operator and patient were separated by many miles, provided that perfect electrical communication were established between them.—*The Graphic*, 31st May 1879, p. 530.

THE AUDIOMETER.—Already have experiments of the greatest practical value been made with the wonderful invention of Professor Hughes described in our last number. Dr B. W. Richardson has been applying it in two ways—as an audiometer for the measurement of hearing, and a sphygmophone for measuring the pulse. Both applications were described at the last meeting of the Royal Society. The audiometer, as it had been used, was shown to the Society. It consists of two Leclanché's cells for the battery, a new and simple microphonic key connected with the cells and with two fixed primary coils, and a secondary or induction coil, the terminals of which are attached to a telephone. The induction coil moves on a bar between the two fixed coils, and the bar is graduated into 200 parts, by which the readings of sound are taken. The graduated scale is divided into 20 centims., and each of these parts is subdivided into 10, so that the hearing may be tested from the maximum of 200 units to 0° zero. The fixed coil on the right hand contains 6 metres of wire, the fixed coil on the left hand contains 100 metres. By this means a long scale from the left hand coil is produced. The secondary coil contains 100 metres of wire. In using the instrument the induction coil is moved along the scale from or towards the larger primary, as may be required, and the degrees or units of sound are read from the figures on the scale, the sound being made by the movement of the microphonic key between the battery and the primary coils. The instrument may be considered to afford the most satisfactory means for testing the hearing power of all persons who can define a sound. The range of sound is sufficient at the maximum—200°—for every one who is not absolutely deaf; 0°, or zero, is a point of positive silence from the instrument, or rather from the sound which it

produces through the telephone. One of the first facts learned with the audiometer is the suddenness with which the sound is lost to those who are listening. The sound is abruptly lost within a range of 2° , that is, within one-hundredth part of the entire scale. This is the case with those who are very deaf, as well as with those who hear readily. In testing the capacity of hearing, it is noticeable that the power to detect the diminishing sound is maintained best by continuing the reduction in trace or line while the attention is fixed. A sudden break may cause the sound to be lost to the listener long before its real incapacity to hear is reached. If, for instance, the sound be very faintly heard at 15° , and the induction coil be suddenly moved to 5° , the sound at 5° may be quite inaudible; but if the coil be slowly moved, unit by unit, from 15° to 5° , the sound at 5° may be distinctly heard. The effect of filling the chest and holding the breath makes a difference in listeners. The capacity for hearing is for a few seconds increased by holding the breath. Holding the breath with the chest not full fails to produce the same result. As a rule, the hearing of persons who are right-handed is most refined in the right ear, and as most persons are right-handed, it is found that the right ear is the best ear. This rule is, however, attended with many exceptions, since, for various reasons, some persons who use the right hand exclusively, practise for some particular purpose the use of the left ear, upon which that ear becomes more acute. Another point of interest attaching to this observation is, that the practice of using one ear, for special refinement of the sense, seems for the time slightly to impair the other ear, although there is no physical evidence of such impairment. Connected with the last-named fact is another, namely, that by this instrument the deaf are found to fail in capacity of hearing, not only by reason of physical defect, but also by failure of memory of sounds. Thus, in a youth who had suffered serious defect of hearing for seven years, owing to partial destruction of the tympanum, and who in the right ear could only detect sound at 107° , there was an inability to catch all the sound lying between 130° and 107° , until he could remember what he had to listen for. By practising him, then, to detect the lowest sound that he was physically capable of receiving, Dr Richardson got him to detect this one sound more readily than those which came higher up. By further practice all the intervening sounds became audible with equal facility. By use of the audiometer the influence of atmospheric pressure on hearing is detectable. In Dr Richardson's own case, when the barometer is at 30° he can hear on both sides close down to zero; but below 30° he fails by 2° on the left side to reach zero. In another person a similar failure extends to a loss of 4° . Dr Richardson has tried to determine in some of the lower animals whether there is the same sense of hearing as in man. In two dogs, one a terrier, the other a field-spaniel, the range of hearing power seemed to be distinctly lower than it is

in the human subject who has perfect hearing. In both these animals, which were healthy and in the prime of life, the first indication of the detection of sound commenced at 10° on the scale.

Dr Richardson's practical conclusions are:—

1. The audiometer will, he thinks, be an essential in all physical examinations of men who are undergoing examination as to their fitness for special services requiring perfect hearing, such as soldiers, sentries, railway officials, and the like.
2. The instrument will be of great use to the physician in determining the value of hearing in those who are deaf, and in determining the relative values of the two organs of hearing.
3. In other forms of diagnosis he has found the instrument useful, as in anæmia and vertigo.
4. The instrument may be used to differentiate between deafness through the external ear and deafness from closure of the Eustachian tube—throat deafness.
5. The instrument promises to be very useful in detecting the effects in the body of those agents which quicken or excite the circulation, such as alcohol and other similar chemical substances.
6. The instrument promises to be of great service in determining the value of artificial tympanums in instances of deafness due to imperfection or destruction of the natural tympanum. Dr Richardson finds in fine gold the substance for making the most useful and effective artificial drum.

The sphymophone, for obtaining a secondary or telephonic sound from the movements of the pulse at the wrist, is devised by adding a microphone to a Pond's sphymograph. Dr Richardson mounts on a slip of talc, glass, or wood, a thin plate of platinum or gas carbon. He places the slip in the sphymograph, as if about to take a tracing of the pulse. One terminal from a Leclanché's cell is connected to the platinum or carbon, and the second terminal from the cell to a terminal of the telephone, the other terminal of the telephone with the metal rod of the sphymograph which supports the slip. The instrument is placed on the pulse in the ordinary way, and is adjusted, with the writing-needle thrown back, until a good pulsating movement of the needle is secured. The needle, in passing over the metallic plate, causes a distinct series of sounds from the telephone which correspond with the movements of the pulse. The sounds are singular, as resembling the two words "bother it." The sounds can be made very loud by increasing the battery power. In this connexion, we may state that in the last number of *La Nature* a micro-telephonic explorer is described, also evidently of great use in pathology. This is a simple instrument, devised by MM. Charden and Prayer, consisting of a telephonic apparatus, with microphonic intermediary to intensify any sounds sought for, and which, among other purposes, will be of great service in detecting any foreign body in a vital organ. The apparatus is quite portable, and worked with comparative ease, though doubtless actual practice will suggest improvements both in this and in the applications devised by Dr Richardson.—*Nature*, 29th May 1879, pp. 102, 103.

Our best thanks are due to the proprietors of *The Graphic* for kindly supplying us with the illustrations necessary to clearly understand the construction of the apparatus. We would refer our readers to what we consider the first application of the electric telephone to aural therapeutics by Mr James Blyth, F.R.S.E., the description which will be found in the *Edinburgh Medical Journal* for April 1878, page 949.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., F.R.C.P., Lecturer on Diseases of the Skin, Edinburgh School of Medicine.

TREATMENT OF CHLOASMA UTERINUM.—Dr James C. White, in the course of a lecture on various forms of melanoderma, refers to that form of hypertrophy of pigment met with on the face and especially the forehead of females. The tint changes from a light buff to the darkest brown, altering from time to time in intensity, and appearing lighter on days when the patient feels strong, darker when depressed or during the menstrual period, according to the freshness and amount of blood in the underlying cutaneous tissues. The surface of these patches is always smooth and normal. It occurs most frequently in women between the age of twenty and the cessation of menstruation, and in those who suffer from derangement of the sexual functions, or who are anæmic or debilitated from other causes. Although so often dependent apparently upon functional disturbances, when once developed it is slow to disappear, even when the health of the patient is fully restored. In spite of one of its popular titles, it is not connected with the liver. In the treatment of this condition we must remember that the increased deposit of pigment lies in the very deepest layers of the epidermis, and is in its nature indestructible, except by chemical agents so powerful that they could not be used upon the skin. The cells of the rete, including those which contain the natural or increased pigment, become in time the flattened horny cells of the outer cuticle, and are cast off in the normal and imperceptible process of desquamation. Certain irritants hasten the rapidity of this process, and thus lessen the pigmentation. Of those, in chloasma, corrosive sublimate in solution surpasses all others in efficacy. Its action can be most accurately regulated by adjusting the strength of the solution to the susceptibility of the skin in each case. Alcohol is a better solvent than water, because, as it evaporates more quickly, the solution is not so likely to run down upon the contiguous parts, and as the patches are often abruptly defined, this is of some importance. A solution of four grains to the ounce is the best working strength, painted over the pigmented parts at bedtime, one coat at

first, and a second may after a time be borne, but excessive stimulation is to be avoided. The parts are to be washed with soap and water in the morning; if the skin is not too sensitive, friction with pumice-stone aids desquamation. In course of weeks either the discoloration disappears or at least becomes much fainter. Permanence of effect is only secured by a continuance of the remedies as long as the pigment cells show a tendency to excessive reproduction; when applied to such patches as are met with on the face there is no danger of absorption.—*Boston Medical and Surgical Journal*, 16th May 1878.

INOCULABILITY OF *TINEA TONSURANS* ON THE LOWER ANIMALS.—Dr Shoemaker, in an account of an outbreak of ringworm among the children at a public institution in Philadelphia, gives a description of the effect of the application of scales from diseased patches to the bodies of cats. For three days he was not able to detect any change on the parts on which the scales were placed, but on the beginning of the fourth, a small meal-like spot was observed upon one, and on another the hairs began to fall out. By the fifth day the patches had attained the characteristic circular form, and the affection continued to spread rapidly, until spots the size of a large coin were almost denuded of hair. Scales from the patches of one of the cats were re-inoculated on a healthy portion of the scalp of one of the children, and thigh of another, with the effect of reproducing ringworm. A section of the skin of one of the cats was also made and examined microscopically. The parasite was observed among the scales of the horny layer of the epidermis, in the cutis on the hair shaft, while small abscesses were also to be seen in the rete mucosum and in the hair follicles. The parasite could not, however, be detected in the subcutaneous cellular tissue.

ROSACEA.—Dr Shoemaker defines rosacea as distinct from acne, believing the bloodvessels and dermal connective tissue to be primarily the seat of the disorder, and the glands to become involved secondarily. "Rosacea is a chronic inflammatory disease of a portion of the face, characterized by vivid redness, due to an enlargement of the capillary bloodvessels, and later, by hypertrophy of the subcutaneous cellular tissue." It is met with in three stages—the congestive, varicose, and hypertrophic. It is often complicated with seborrhœa oleosa, and eventually by encroaching on the glands leads to the formation of scattered papules and pustules, while the skin becomes rough and granulated. Besides the causes ordinarily stated, Dr Shoemaker has found cosmetics, paints, and irritating lotions to be active agents in its production. In the treatment of this condition, soaps, tar, sulphur, and other stimulating applications having, in his experience, failed, he adopted the plan of relieving the engorged capillaries, and then soothing the hyperæmic skin, and in this way

good results have been attained. The mode of procedure is to make punctures with a knife, much like a fine needle, but with a spear-shaped extremity, twice a week. At each sitting the pustules were opened, and the tubercles and reddened patches incised, sponging the parts well with warm water at the same time, and permitting them to bleed freely. Afterwards the B. P. zinc ointment, made softer by addition of olive oil, was painted on, and the face was bathed at night with an astringent lotion, containing sulphate of zinc and acetate of lead. At times collodion painted on tended to diminish the calibre of the vessels in obstinate cases. Improvement was slow, but progressive, and in time a perfect cure resulted. Shoemaker adds that his method of puncture differs from that of scarification recommended by Von Hebra and Squire; this, however, is open to question.—*Reprint*, Philadelphia, 1878.

ECZEMA TREATED BY THE SOLID RUBBER BANDAGE.—The value of Dr Martin's bandage in ulcers of the legs is acknowledged, but Dr Bulkley contributes his experience of its use in eczema, with details of twenty-seven cases, in all of which much improvement, and in most cure, resulted. Eczema of the lower limbs is often associated with, and more or less dependent on, a varicose condition of the veins, and even when this is not an evident feature, still the natural state in eczema is one of capillary enlargement, and the gentle compression of the bandage remedies this. It is especially valuable in chronic cases of eczema, such as ordinarily resist all measures commonly employed. But it is also applicable when there is an acute or sub-acute inflammatory condition, or where there is simply infiltrated tissue left after an eczema. Dr Bulkley removes the bandage at night, then has the leg washed with lukewarm water, and carefully dried, and if there is still a discharging eczematous surface, it may be covered with cotton-batting, and an ordinary roller bandage or other dressing applied. Elevation of the limb during sleep to lessen blood pressure, or, if it is very hot and painful, cool applications may be made outside the bandage. After wearing the bandage for some time the limb becomes somewhat susceptible to cold, the tissues being softened, and the sweat glands active, hence in severe weather some extra protection should be worn for a while after leaving it off. The bandage, after a cure is effected, should not be discontinued too soon, and if it is well applied, walking and exercise is a benefit rather than a drawback. Cases may occur where the rubber bandage is inapplicable, but so far Dr Bulkley has not met with any such.—*Archives of Dermatology*, July 1878.

THE LOCAL TREATMENT OF ECZEMA.—In no affection with which we are familiar, says Dr Piffard, is it so important that the idea of a routine treatment, based upon nosology, should be abandoned. As regards the *internal*, it is the *patient*, with all his

functional or organic derangements, that demands consideration; in the *local* treatment it is the cutaneous *lesion* that must be studied and cared for. Eczema begins by a period of local cutaneous congestion, which eventuates in one of the so-called special primary lesions of the disease. One of these little noticed in the text-books is the erythematous form, in which there is, most frequently on the face, redness, often a trace of fine desquamation, with possibly a little occasional moisture, alternating with the more usual dryness. Such cases were formerly classed as chronic erythemata, but are now regarded as a phase of eczema. There is moderate heat or itching. Besides the more common astringents, Dr Piffard has found much advantage from a solution of ten to twenty grains of potassium bromide in the ounce of rose-water, with a little glycerine. Itching is much relieved by an ointment composed of from ten to twenty grains in the ounce of the mixture of equal parts of chloral hydrate and camphor, introduced by McCall Anderson. This, however, causes pain when applied to a portion of skin from which the epidermis has been removed. In eczema characterized by exudation and crusts, as in the vesicular, pustular, and exfoliative varieties, the delicate and succulent cells of the rete Malpighi being exposed, plain water used to wash with proves irritating. This is due to endosmosis, and is avoided by using a fluid whose specific gravity is about the same as that of the serum of the blood. "A mixture that we frequently employ is rose-water, to which has been added a little glycerine and common salt." This is much less irritating than pure water. In the fissured form of eczema, especially on the palms of the hands and behind the ears, plumbago, and the best for this purpose is that known as "photographic graphite," in ointment (1-10), or mixed with lycopodium or some other inert powder, is exceedingly valuable. In chronic eczema, hypodermic injections of from $\frac{1}{4}$ th to 1 per cent. of arseniate of sodium into the eczematous patches, and repeated at intervals of two or three days, have given of late excellent results. (This would support the view of the *local* action of arsenic on the deep formative layers of the rete cells, which we lately advanced as an explanation of its action in psoriasis.—W. A. J.)—*New York Medical Record*, 26th October 1878.

ON A CASE OF SYPHILITIC RE-INFECTION.—Venot's case seems reliable, and may be added to those already possessed by the profession. A man of 35 has chancre followed by secondary symptoms and several relapses. His malady is light, and his mercurial treatment short. Three and a half years afterwards he gets two indurated chancres, with indurated ganglions, and a macular syphilo-derm, lasting three weeks. All these symptoms disappear without treatment, and nothing further occurs up to the date of the report of the case (*Le Bordeaux*, March 1877).—*Archives of Dermatology*, January 1879.

ASSAFOETIDA AS AN AGENT TO HASTEN THE EXTRUSION OF GUINEA WORM.—Dr Tilbury Fox, in accordance with the suggestion of Dr Horton, administered assafoetida to a lady affected with guinea worm. Five days afterwards the worm had extruded itself to the extent of an inch and a half. And next day the entire worm, measuring twenty-three inches and a half, was found in a poultice which had been applied over night. He attributes the rapid expulsion to the assafoetida.—*Lancet*, 8th March 1879.

PERISCOPE OF SYPHILOLOGY.

By FRANCIS CADELL, F.R.C.S.E.

THE VIRUS OF VENEREAL SORES: ITS UNITY OR DUALITY.—The question of the origin of the soft chancre is discussed in a pamphlet by Dr Bumstead, of New York. He believes that the soft chancre or *chancroid*, as he prefers to call it, may arise from the products of simple inflammation, and so be entirely separate from syphilis, thus supporting the dualistic belief. The following account of experiments on this subject is valuable:—"The earliest of these experiments, as far as I am aware, have never been published, and were performed in the winter of 1867-8 by Dr Edward Wigglesworth, jun., of Boston, upon himself while pursuing his studies at Vienna. He has kindly furnished me with the following history:—After stating the grounds which led him to the conclusion—original, it appears, with himself—that '*pus, pure and simple, might be the cause of the chancroid*,' Dr W. says:—'I would state that I was free from all disease, either hereditary or acquired; that I had never had a sore of any kind, or any local or constitutional lesion of the skin or mucous membranes, and that I was merely a little run down from overwork in the hospital. I took from an acne pustule upon myself pus which I inoculated upon myself in three places on the anterior radial aspect of my left forearm, at the junction of the middle and upper thirds, first pricking open the apertures of the hair follicles, and then rubbing the pus into them. The result in the course of three or four days was three well-marked pustules. From each of these I inoculated one new spot, and again the result was positive.' The conclusions drawn from these experiments were:—1. That the products of inflammatory action, if properly introduced into the human integument, may cause local ulcers closely resembling chancroids, and reinoculable in generations. 2. That this pus need not come from a syphilitic person, or be inoculated upon a syphilitic person. If taken from, or inoculated upon, a person debilitated by any disease as syphilis, the effect would doubtless be the same, though probably greater in intensity." Many years subsequent to these

experiments Kaposi published the following statement:—"My own experiments have taught me that non-specific pus, such as that from acne and scabies-pustules, when inoculated upon the bearers, as well as upon other non-syphilitic persons, will produce pustules, whose pus proves to be continuously inoculable in generations; that from these pustules losses of substance occur, which heal with the formation of scar-tissue; and that as the number of pustules produced increases, the inoculability of the pus derived from them diminishes, and finally ceases altogether." Dr Bumstead believes that Mr Hutchison was "one short step of the truth," when he admitted the origin of the local venereal sore to be "the products of syphilitic inflammation, but not usually containing the germs of syphilis." If he had omitted the adjective "syphilitic" before the word "inflammation," his expression, the author thinks, would have been consistent with the facts at present in our possession. Dr Bumstead thus divides his conclusion into the following propositions:—1. The virus of venereal sores is dual. 2. Some venereal sores are due to the inoculation of the syphilitic virus. 3. Other venereal sores are due to the products of simple inflammation. 4. The two poisons may be inoculated simultaneously.

CHECKS TO POPULATION.—In a pamphlet reprinted from *The Medical Press and Circular*, October 1878, Dr Routh speaks strongly of the moral and physical evils likely to follow from such practices. He describes the ordinary methods employed to prevent conception. It has been reserved, however, he says, for some of our own people to discover a fifth method. The intra-uterine stem is here referred to, which originally intended to dilate the uterine canal, and when removed, to place a woman in those conditions most favourable for conception, is frequently continuously worn to *prevent* conception. Bergeret is quoted to show the vast amount of uterine disease set up by such practices. Among men, general nervous prostration, mental decay, loss of memory, intense cardiac palpitations, mania, conditions which also lead to suicide, are given as the results of the method of withdrawal or conjugal onanism. These habits are injurious in other ways:—1st, They lead to a diminution of population; 2d, They produce a deterioration in the physical strength of a race, and they bring about great demoralization. With reference to those cases where life may be endangered by procreation on account of pelvic deformity, Dr Routh advises that the conjugal relations should be methodized. Reference is here made to Mayer's view (*Rapports Conjugaux*, p. 240), that conception cannot occur after the twelfth day which follows the end of a period, and up to the recurrence of the catamenia, during which interval connexion is not likely to lead to impregnation. Surely methodizing on this plan would merely be another kind of sexual fraud, but probably the least to be depended on.

CASE OF REUNION OF A SEVERED PORTION OF FINGER.—A few years ago, in Berwick, a friend, C— G—, D.Sc. Lond. Univ., while engaged in his chemical laboratory in cutting a piece of wood with an axe, had the mishap to chop off a portion of the ring finger of the left hand, the wound being midway between the matrix of the nail and the joint. The detached portion fell among some shavings and sawdust. Wrapping his hand in a handkerchief, he set off to the house of his medical attendant, who, as it happened, was not at home. He then repaired to the house of another surgeon, who was also away, and finally returned to the dispensary (next to his own dwelling), expecting to find some of the medical officers there. It was at the door of that institution I saw him. Taking him into the consulting-room, I had the stump washed. Upon hearing the history of the case, I suggested that the piece should be got and replaced, in the almost vain hope of reunion. Dr G. himself went to the house, and searching amongst the shavings, brought back the piece of finger. After washing, it was replaced, strapped with adhesive plaster, and fixed with a splint. All went on favourably, and now it presents no difference to its neighbour of the right hand, except a slightly “pinched” appearance. All that may be said to be remarkable in this case, is the length of time elapsing between the amputation and the replacing of the finger. Considering the delay in preparing to leave his house, walking to Dr K.’s, waiting there until the bell was answered, returning to Dr F.’s with a like delay, and then to the dispensary, searching for and washing the amputated portion, the time occupied could not be less than between thirty and forty minutes.

Part Fifth.

MEDICAL NEWS.

MURCHISON MEMORIAL.

A MEETING was held in the Materia Medica Class-room of the University of Edinburgh on Friday, 13th June, with the object of aiding the proposed memorial to Dr Murchison.

The chair was occupied by Sir Robert Christison, Bart. There were also present Professor Douglas Maclagan, Professor Turner, Professor Sanders, Professor Grainger Stewart, Professor Rutherford, Professor Fraser, ex-Professor Balfour, Dr A. G. Balfour, Dr Dyce Duckworth, etc.

SIR ROBERT CHRISTISON, in explaining the object of the meeting, said it was proposed to commemorate the services of Dr Murchison on four grounds: first, because of his distinction both as a student and as a graduate of this University; secondly, on account of the services he rendered to medical science and medical litera-

ture during his professional life; thirdly, on account of his amiable character; lastly, and perhaps not least, because of the sympathy they must feel for Dr Murchison, almost as if he were still with them, on account of the remarkable termination of his life. Some years before his death he was acquainted with the fact that he was labouring under an infallibly mortal disease, which could not leave him long in this world, and which was likely to terminate his life, as it did, suddenly and without warning. They all knew how he received the intimation of his condition, and continued to discharge the duties of his profession to the very end with all the courage of a man and the resignation of a Christian.

Professor MACLAGAN, after referring to Dr Murchison's life and attainments, proposed—"That this meeting fully approves the scheme that a memorial to the late Dr Charles Murchison take the form of a scholarship in clinical medicine, to be awarded alternately by the Universities of Edinburgh and of London, and pledges itself to co-operate heartily to promote its success."

Professor GRAINGER STEWART seconded the motion, which was carried by acclamation.

On the motion of Professor TURNER a committee, consisting of Sir Robert Christison (convener), Dr Peddie (President of the College of Physicians), Professor Sanders, and Professor Grainger Stewart, was appointed to promote the memorial in Scotland, and to act in conjunction with the London committee.

Dr DYCE DUCKWORTH explained the origin of the movement, and stated the steps which had been taken in the matter.

Professor SANDERS referred feelingly to Dr Murchison's worth both as a man and a physician.

A considerable number of subscriptions were intimated, and the meeting terminated with a vote of thanks to the chairman.

THE NEW ROYAL INFIRMARY.—We understand that a movement has been inaugurated amongst the medical men connected with Edinburgh and the neighbourhood to furnish one or more wards in the New Royal Infirmary. We are glad to be made aware of the project, and would venture to urge upon our friends throughout the country to encourage and promote its success. Circulars have been issued drawing attention to the scheme, and we hope before long to learn that subscriptions have been intimated sufficient to furnish not only one but two Practitioners' Wards. The Committee of Management consists of the Lord Provost, the Presidents of both Colleges, and Sir Robert Christison, who is also chairman. Dr James Young and Dr Peel Ritchie are the treasurers for the fund.

ROYAL VISIT TO THE NEW HERTFORD BRITISH HOSPITAL, PARIS.

THE Prince and Princess of Wales, with the Princess Victoria, attended by Colonel Ellis and Miss Knollys, made a visit of nearly

two hours to the Hertford British Hospital on the 4th June. Their Royal Highnesses were received at the entrance by Lord Lyons, the British Ambassador; Mr Atlee, of the British Embassy, and the two physicians, Sir John Rose Cormack and the Hon. Alan Herbert. Lord Lyons presented the following persons to their Royal Highnesses:—Miss Cormack, daughter of Sir John Cormack; Miss Smith, lady-superintendent of the hospital; the Rev. J. A. Mackay, acting chaplain; Mr Emile Levasseur, treasurer; Mr Edward Neech, dentist; and Dr Christie, house-surgeon.

The Royal visitors went over every part of the building and walked in the gardens. The Prince and Princess both expressed their great admiration of the architectural beauty of the building, its excellent ventilation, and the arrangements for the comfort and well-being of the patients. They spoke individually to most of the patients. A convalescent standing at his bedside attracted the Prince's notice by his military bearing: "You have been a soldier," said the Prince; "Yes, Sir," replied the patient, "and I was one of your Royal Highness's escort at Delhi." Mr Sanson, the architect, explained in French to his Royal Highness that his design of the edifice was inspired by the architecture of the thirteenth century, when the "Hôtel de Dieu," or "Maladrerie," was always situated at the gates of the towns. Their wards were generally great naves resembling those of churches. Mr Sanson said that, by an adaptation of the old style, he had secured an amount of air and light which could not have been otherwise obtained,—a more ample supply of those hygienic essentials—air and light—than the sick have in perhaps any other hospital. The ecclesiastical character of the building—the abundance of light notwithstanding—is strongly marked, as is shown by the observation made by a patient the first morning after her arrival (incidentally mentioned to the Royal visitors), to the effect, that she had "never before slept in a church."

The Prince expressed much regret that Sir Richard Wallace was not present, he having been detained in England by the state of his health. In accordance with Sir Richard's request, his Royal Highness named the principal male ward "Albert Edward," and the principal female ward "Alexandra." Before leaving the hospital their Royal Highnesses partook of refreshments in the dining-room.

MESSRS T. & H. SMITH & CO. AND THE SYDNEY INTERNATIONAL EXHIBITION.—We lately had an opportunity of inspecting the show cases which these well-known chemists of this city have despatched to the Sydney International Exhibition. The specimens are of matchless excellence and beauty, and will, undoubtedly, reflect honour not only on the manufacturers (who are, moreover, the discoverers of several of the alkaloids), but also on the country in which they were produced. We subjoin a short description of the principal substances to be exhibited.

Prominent in the centre, supported upon an ornamental brass bracket, is placed a specimen of caffeine, of much beauty, many of the single needles being over one inch in length. It weighs about 20 oz. Upon the sole of the case there are three very large bowl-shaped specimens, perfect as crystallizations, and each basin measuring 17 inches in diameter, by about 5 inches in depth. In the centre is muriate of thebaia, of an orange-brown colour, in long rhombic spheroid crystals. This specimen is, in many parts, 2 inches in thickness; it weighs 14 lbs. The basins on either side of it contain codein and muriate of papaverine, the former a crystallization of about 130 ounces in weight, the crystals being chiefly rhombic prisms, brilliantly refractive, singularly beautiful and large, others of the crystals being almost perfect triangles, the sides of one more prominent than the others measuring 2 inches in length. The crystals are quite free of colour, a striking feature, for this substance is very susceptible to change in this respect, crystallizing from colourless solutions not uncommonly of a pink, gray, or even of a darker colour. The demand upon the Continent for this alkaloid is usually in excess of the available supply, so much is it in favour with the profession there. The third of the three large basins consists of muriate of papaverine, in pale green crystals, chiefly modified octahedra, and which are also strongly refractive. A small basin of cryptopia is shown in minute white six-sided prisms. Its yield from opium is very small, being, it is estimated, about $\frac{1}{100}$ %, and the quantity of opium necessary to produce what is exhibited exceeds 10,000 lbs. Specimens of gnoscopine and meconoiosine, their most recent discoveries in opium, are also shown, the former remarkable for its extreme insolubility, being soluble only in 1500 parts of cold alcohol, while meconoiosine, on the contrary, which is, besides meconine, the only neutral body known to exist in opium, is soluble in 20 parts of cold water.

Two crystallizations of aloes, in beautiful mossy radiating tufts, are exhibited. This, the active principle of aloes, was discovered by them in 1851 in Barbadoes aloes, and later in Socotrine aloes. Specimens of opium from Egypt, Persia (in cone and in sticks), China, Turkey, India (Malwa and garden Patna), and also from Mozambique are shown. The last mentioned is a portion of the first opium grown in Africa, the promoters of the scheme to introduce this industry there having forwarded samples of their produce to Messrs Smith for report and analysis. Upon shelves above are arranged bottles containing specimens of the other alkaloids and acids of opium, as well as salts of morphia and other products. Muriate of morphia is shown in the light crystallized form, in cubes as introduced by them, and which now is in so great favour upon the Continent that, unless supplied in cubes, this salt is generally regarded with suspicion, and is unacceptable. All the salts of morphia, the muriate, the sulphate (also in light crystals, but woolly and in needles, somewhat resembling sulphate of quinine,

as suited to the American market), acetate, and bimeconate are pure white. The specimen of acetate of morphia alone weighs 60 oz. Of especial interest to the profession is the specimen of tartrate of morphia, the salt which, after a long series of experiments, they have introduced as possessing the characteristics essential to a salt for hypodermic injection, and which, in the March number of this *Journal*, Dr Erskine Stuart states "is the best preparation of morphia which we possess for hypodermic injection."

Muriate of apomorphia is shown in large crystals, of a beautiful steel-gray colour, and cantharidine in fine four-sided prisms, colourless, and of unusual size, both articles in quantities of several ounces. This latter principle they prepare extensively for the manufacture of their cantharidine blistering tissue, or tela vesicatoria, now so widely known and appreciated as a reliable, speedy, and cleanly vesicant, a large strip of which, about 4 feet in length, elegantly mounted and framed, surmounts the other exhibits. Specimens of all the recognised principles of opium are shown, and in particular may be noticed the fine display of morphia itself in large shining prisms, and free from colour. Large specimens of strychnine, with its salts, the nitrate and sulphate, are shown, also santonine, salicine, the latter strikingly white, and citrate of lithia in very fine transparent crystals, very unlike the granular-looking article of the *Pharmacopœia*. In addition may be noticed the brown resins of scammony and jalap, and also the same in powder, both of the latter quite free from colour. The case stands about 10 feet in height, and is 6 feet long, and fully 3 feet in depth.

A second case, fully 3 feet square and 8 feet high, in which are displayed their well-known food products, is being sent to this exhibition. In five shelves are arranged respectively essence of coffee, essence of coffee with chicory, a complete series of flavouring essences for culinary and confectionary purposes, put up in elegant crystal decanters, and numbering between 30 and 40 different sorts, the whole crowned with a pile of their coffee and milk, introduced last year under the registered name of Condensed Café Au Lait, and of the "Aventicum" Swiss condensed milk, for which they are the sole consignees. It is now about forty years since they began to manufacture essence of coffee. The four sides of this case are of glass, and the display is embellished by the addition of two fine crystallizations of caffeine and theine respectively.

OBITUARY.

DR BENNIE OF CURRIE.—This active and talented young practitioner died on the 2d of June, after a very severe attack of typhoid fever. He had, after taking his M.B. in Glasgow in 1873, spent a year or two in seeing the world in medical charge of steam ships, and then settled down in Currie, where he had built up an extensive practice, and gained the esteem and regard of his patients.

DR LEITH OF COMRIE.—Dr Leith of Comrie, who died suddenly there on 3d June, had for many years practised his profession quietly and unostentatiously, doing much good in the district. Somewhat reserved and lacking confidence in his powers of operating, he did not attempt surgical cases of a severe nature, but was much beloved for his attention and kindness, and will be much missed.

DR PAXTON, LATE OF KILMARNOCK.—This worthy man, after forty years' faithful and laborious professional work, retired from practice about four years ago in consequence of failing health. He was during his long practice one of the best known and respected general practitioners in Ayrshire, interested in all that concerned the welfare of his townsmen; an energetic citizen, fond of natural history, comparative anatomy, and the archæology of his district; in a word, an active, useful, and manysided man. He died on 7th June, at Sutton, Surrey.

JAMES WYLIE, Surgeon, ERROL.—The death, 16th June, of this much esteemed gentleman has cast a gloom over the Carse of Gowrie and neighbouring districts, in which, during well-nigh half a century, he had practised his profession with honour and success. Mr Wylie was a typical example of those country practitioners who succeed in securing the confidence of both rich and poor by a combination of valuable qualities that place them, as we have always thought, in the foremost rank of our profession. They lack many advantages which their city brethren possess. Located, it may be, almost single-handed in the centre of a wide stretch of country, they must be able, at a minute's warning, to cope with all possible emergencies, either in medical or surgical practice. Besides being well equipt, they need to be self-reliant, prompt and shifty in the good sense; they need to demean themselves as well-informed and educated gentlemen among the well-bred and cultured few, while respectful, kindly, and sympathetic to the humbler many. Mr Wylie, besides being justly confided in, possessed personal qualities which endeared him to his patients. He, at all periods of his life, entered heartily into athletic games and those manly sports which brighten the few and short holidays of a countryside. Although seventy years of age, and for a long period in precarious health from a cardiac affection, his natural buoyancy of spirit, accompanied by a courage sometimes bordering on rashness, carried him cheerfully through the fatigues and exposures of a wide country practice, almost to the very end. A fracture of his thigh-bone, not long ago, laid him aside for some weeks, but did not prevent the spirited and irrepressible old man from resuming his benevolent and self-denying labours. That such a public servant should be greatly missed is not to be wondered at. His son Dr David Wylie, who has assisted him for twenty years, will now take his place.

CORRESPONDENCE.

To the Editor of the *Edinburgh Medical Journal*.

Edinburgh, 12th May 1879.

Sir,—The following method of treating diphtheria I have, for a number of years, found to be so uniformly successful—in all cases in which I saw the patients before the disease had extended beyond the tonsils (or such parts as could be readily reached)—that I do not hesitate to make it public through the medium of the *Edinburgh Medical Journal*.

The treatment consists in the free *application* to the patches of exudation, every 3 or 4 hours, of a mixture of 1 part liquor sodæ chloratæ and 3 to 6 parts of water. When the proportion of the solution of chlorinated soda is too great, a suffocative feeling is produced—caused, I suppose, by spasm of the glottis. I give, *internally*, 1 grain of quinine and 5 grains of chlorate of potass every four hours.

If I occasionally apply poultices, it is not because I expect much benefit from them, but rather to please the relatives of the patients.

The diet has consisted of milk, milk and arrowroot, and such like. Very rarely have I given alcohol in any form.—I am, Sir, your obedient servant.

SOMMERVILLE OLIVER.

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Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Observations on the Nature, Symptoms, and Treatment of Constricted or Strangulated Herniæ, reduced "En Bloc."* By Professor SPENCE.

(Read before the Medico-Chirurgical Society of Edinburgh, 4th June 1879.)

I HAVE been induced to bring these observations before the Society in consequence of reading a communication brought before it by Professor Annandale in which he narrated a case he had operated on by opening the abdominal cavity in the mesial line, and relieved the intestine from within, and in his remarks advocated that method of operating in those cases of hernia reduced *en bloc* in which no tumour can be felt. As the remarks of those who took part in the discussion which followed seemed also to favour a view which, after some experience in such cases, I cannot consider a safe one, I have thought it might be advantageous to review the principles of diagnosis and treatment in relation to the conditions present in such cases.

It may be said, that after a hernia has been reduced and symptoms of obstruction continue, doubts may arise as to whether these symptoms may not depend on some internal strangulation or volvulus coincident with the presence of a reducible hernia; and in such cases mesial incision would be the best plan of operating. But if I can show, from a consideration of the relations and state of parts, and from what I have observed of the symptoms and conditions of herniæ reduced *en bloc* on which I have operated, that the diagnosis is not so difficult as seems to be supposed, then the indication for the performance of the old or direct method in preference to mesial incision in herniæ reduced *en bloc* will become evident.

As regards the state and relation of parts in a hernia reduced *en bloc*. If we consider the way in which the sac is formed by the parietal peritoneum, it is obvious, first, that when a portion of gut constricted by the neck of the sac, or by the condensed tissue around the neck of the sac, is pushed back from the canal

through which it had protruded, the mass must lie between the parietal peritoneum and the abdominal parietes in close proximity to the upper part of that canal. In some cases the fundus of the sac may not be pushed quite out of the canal. In those cases, however, in which no tumour can be felt, the constricted hernia has been pushed fairly through the upper opening of the canal, and lies between the fascia transversalis and peritoneum, with the body of the sac pressed aside, more or less bent upon its neck, and no longer corresponding to the axis of the deep ring or course of the canal, through which it formerly protruded. In the second place, it is impossible that the constricted mass can ever be pushed within the peritoneal cavity, because that could only be effected by invaginating the sac, and in doing that its contents must be everted and so relieved from constriction.

It is not difficult to understand how small herniæ, such as femoral, may be pushed up through the short canal within the abdominal parietes. The cases likely to give rise to doubt are cases of large inguino-scrotal hernia, in which the rupture has been reduced with some difficulty, perhaps, but with distinct sense of "gurgling."

It may at first seem difficult to conceive of such a large hernial protrusion being pushed back constricted. The condition of the hernia in these cases requires explanation, as it is one not much alluded to in surgical works. It is one to which I drew attention in reference to a case of strangulated scrotal hernia on which I operated in 1840. The peculiarity consists of the division of the sac into two cavities, a large upper part and a small lower compartment, with a narrow thickened orifice or canal of communication between them. In such cases the strangulation is at the constricted neck of what I may call the lower and smaller sac. Hence, whilst the contents of the larger sac are reduced with the sense of gurgling, it acts as a dilator, the small constricted mass follows and is pushed up within the parietes, still constricted.¹

Keeping in mind the relations and state of parts in herniæ reduced *en bloc*, I proceed now to connect them with certain symptoms which I consider characteristic of that accident which distinguish it from other causes of obstruction, such as internal strangulation and volvulus coincident with a reducible hernia.

In all cases of hernia reduced *en bloc*, we have the history of the presence of a hernial protrusion in the first instance accompanied by incipient symptoms of constriction. The apparent reduction of the protrusion with more or less difficulty, the con-

¹ I may remark, that the conditions of rupture of the sac, tearing off of the neck of the sac, quoted by Mr Annandale from Mr Birkett's article on hernia, must be of rare occurrence. Although I have operated on many cases in which violent efforts had been used to accomplish reduction by taxis, even to the abrasion and fissuring of the peritoneal coat of the intestine, I have only met with one instance of rupture of the sac, and that in a case of congenital hernia. I have never yet seen a case in which the neck was torn from the body of the sac.

tinuance and gradual aggravation of the symptoms of obstruction, occasionally, perhaps, some slight remission of more urgent symptoms, but never any real relief. If the protrusion has been fairly pushed up within the parietes, then no tumour can be felt. Even in cases of large scrotal herniæ so reduced *en masse*, in which the dilated and now empty canal permits the finger or fingers to be easily passed up throughout its whole extent, nothing can be felt beyond a dull impulse on coughing.

There may be a greater degree of dulness on percussion and tenderness over the part of the abdomen corresponding to the deep ring, and above it, than elsewhere, if we have an opportunity of examining the patient soon after the mass has been reduced. But most usually when the surgeon is consulted the general tenderness and tension of the abdomen render the symptoms indistinct.

The condition or symptom on which, from experience and from consideration of the state of parts, I rely as diagnostic, is, that when the constricted protrusion has been pushed up from the canal completely within the parietes, no effort of coughing or action of the abdominal muscles can make the hernial swelling reappear. This I consider to be quite characteristic of the true nature of the case as distinguished either from a constricted hernia partially reduced from the canal, or from an internal strangulation coincident with a reducible hernia.

In the former case the patient may, by forcible effort of coughing, or by being made to sneeze, cause the hernia to descend, and then it comes down with a "bolt" *en masse*, and leaves little doubt as to the mode of treatment. In such a case, the fundus of the hernial tumour has still occupied the upper opening of the canal, and its body still corresponded to the axis of the canal, and so there is nothing to prevent a certain degree or kind of force causing it to descend as I have described. In the case of a protrusion reduced *en bloc* within the parietes, it no longer corresponds to the opening or course of the canal. It is pressed aside, with the body flexed on the neck of the sac, out of the line of the canal from which it has been pushed, and therefore cannot be made to reappear.

In the case where the obstruction depends on the existence of an internal strangulation coincident with a reducible hernia, when the hernia is reduced there will be no difficulty in causing it to reappear, rather, on the contrary, there will be difficulty in retaining the hernial protrusion in consequence of the abdominal tension causing the free intestine to escape. This is what we see in cases of double hernia, when one of them becomes strangulated. Both herniæ are tense, the unconstricted one is reduced with some difficulty, and when reduced has a constant tendency to protrude, until the abdominal tension is removed by relieving the constriction on the strangulated hernia. I think it will be admitted that the conditions leading to the symptoms in both cases are, if

not identical, strictly analogous. From what I have stated regarding the condition of parts, and from what I have observed in cases in which I have been consulted, and on which I have operated, I feel satisfied that there should be little difficulty in arriving at a decided diagnosis between an internal strangulation and a hernia reduced *en bloc*.

As to treatment, the sooner operative measures are resorted to the better, and as to the method of operating, I feel satisfied that the old or direct method is better suited for cases of hernia reduced *en bloc* than the mesial incision. Let us briefly consider the advantages and disadvantages of each method. In the direct method, by incising in the line of, and laying freely open, the canal through which the hernia formerly protruded, we are certain of finding the constricted hernia as it is fixed by its connexion with the peritoneum, and if the incisions be properly planned, we generally find it easily, and can readily bring it down into the canal. Then we deal with it as in an ordinary hernial operation,¹ opening the sac and examining its contents, to satisfy ourselves of their condition, and of the propriety of reducing them or otherwise. Next, by dividing the constriction to a moderate extent, we feel whether the gut is adherent, and if not, we can draw it gently down so as to see the part which has been more immediately under the constriction (for that is the point of danger), and judge of its condition and its fitness for reduction. And all this is done whilst the parts are, as it were, outside the abdominal cavity, and therefore with little or no risk of fecal extravasation.

Again, if, as is too generally the case in hernia reduced *en bloc*, we find the intestine gangrenous or parts of it in a doubtful state, we can deal with it much more satisfactorily than if we had opened the sac from within the abdomen, and had to deal with gangrenous gut in that cavity. It not unfrequently happens in hernial cases in which constriction has continued for some time, that changes have begun in the gut which was directly under constriction, sometimes pretty firm through recent adhesions, with softening of the gut in the immediate vicinity. In other cases the state of the strangulated intestine may be such as to render its reduction of doubtful propriety, even if not adherent. We know that though the peritoneal aspect of the intestine is not gangrenous, that the mucous membrane at the seat of constriction suffers at an earlier period, and is liable to ulcerate and lead to perforation, with its fatal consequences, if the doubtful portion of bowel has been returned within the abdominal cavity. In such cases the proper plan is to relieve constriction freely, but not to reduce the doubtful portion of bowel immediately. Here it is

¹ In some cases of femoral hernia, owing to the loose connexion of the peritoneum, the constricted mass is sometimes pushed back so as to lie partly within the brim of the true pelvis; but there is no real difficulty in finding and drawing it down, if the surgeon feels gently in different directions with his finger.

evident that we can examine and deal with the contents of the sac much more safely and satisfactorily, by what I call the direct method than by a mesial incision, by which we can only reach the strangulated intestine indirectly, and cannot see or judge of its state at or below the constriction until we have freed and brought it into the cavity of the abdomen.

The mesial incision in cases of strangulated hernia reduced *en bloc*, besides being more dangerous than the old or direct method, seems to me to present no advantage whatever, except to resolve a doubtful diagnosis, which, for the reasons I have adduced, I do not think should exist. Mesial incision or gastrotony in cases of internal obstruction is certainly proper and much more frequently performed than formerly, but even in such cases its results are not specially brilliant, whilst all who have performed it know that it is often troublesome, complicated, and dangerous.

It is true that in many cases, by making a limited incision, and taking care never to allow any large portion of distended intestine to protrude, but examining and returning it bit by bit until we arrive at the point of obstruction, we may accomplish our object without much exposure or manipulation of the intestine. In other cases, however, as in some cases of volvulus where the mass of intestines prevents us seeing and dealing with the obstructed portion, and in which the distended small intestines require to be for a time withdrawn from the abdominal cavity, or in cases where, in spite of our efforts to control them, the coils of distended intestines escape, we have in the mesial incision formidable sources of embarrassment to the surgeon and danger to the patient, from which the direct operation for herniæ reduced *en bloc* is free.

But suppose that in operating by the mesial incision on a case of hernia reduced *en bloc* the surgeon is readily guided by the distended intestine to the seat of strangulation. What then? He has reached it indirectly; he cannot see or examine it even imperfectly without exercising traction to bring it from the inguinal or inguino-femoral region towards the mesial line, and here begins one of its greatest risks. It is said that extrication of the constricted hernial protrusion can be more easily effected by traction from within than by pressure from without, as in taxis. That is true under certain conditions, as when the protrusion is recent and not very tightly constricted, as in the earlier stage of strangulation. We know the value of exciting peristaltic movement of the intestine by enemata as an auxiliary to or to prepare for the taxis. It is on the same principle also that the old Indian method of reducing a hernia by means of a sheet or cloth passed across the abdomen and drawn from below upwards, whilst the patient is placed on an incline with the head down and the lower part of the body raised, is successful in aiding ordinary taxis. But in cases of herniæ reduced *en bloc* the conditions are different. The supposition that the rupture has been fairly reduced too generally leads to temporizing treatment and loss of time before the danger

is realized and the propriety of operative interference considered, and in the meantime the reduction *en masse* has intensified the constriction and aggravated the tendency to morbid alteration in structure. We have only to look at preparations from fatal cases of strangulated hernia to see what might often occur if traction were made from within to extricate the constricted intestine. In many cases the partially adherent and altered gut would give way at or above the seat of stricture, and its contents would be extravasated into the peritoneal cavity. Or if, as must frequently happen, the constriction was so tight as to require division by the knife from within, such a procedure would be attended with less safety and certainty as to the relation of the bloodvessels, but especially with greater risk of wounding the distended intestine below the constriction, as the surgeon could not push aside or guard it, as he does when he opens the sac and divides the stricture in the usual way from below upwards from without.

Then, in dealing with doubtful or partially gangrenous intestine, to which I have already alluded, we would be placed at great disadvantage in managing the intestine, whilst, if the state of the gut led to the formation of an artificial anus, the central abdominal region would certainly not be preferable to the groin.

Looking at the question from every point of view, I feel satisfied that the ordinary direct method of operating in cases of strangulated hernia reduced *en bloc* is the proper procedure, founded on true principles, and decidedly preferable to mesial abdominal section.

Before closing, I cannot too strongly urge the imperative need for watchfulness and early interference when symptoms of obstruction arise or continue after apparent reduction of a hernia. There should be as little palliative treatment by opiates as possible, for these mask the urgent symptoms, and so lead to fatal delay. For my own part, from what I have seen, I would say that if, under such circumstances, the protrusion formerly present could not be made to descend by any effort, then operative procedure is clearly indicated, and should be performed at once. In most cases it is only resorted to too late to save life.

ARTICLE II.—*Observations on some points in Dextral Valvular Disease of the Heart, being a Graduation Thesis.* By ALEXANDER MORISON, M.D. Edin., of London.

(Continued from page 712, vol. xxiv.)

To assist further inquiry into the nature of dextral valve lesions, and to provide a larger number of data from which to draw conclusions, I have compiled the annexed table of cases of valvular disease of the right heart. The series does not pretend to be exhaustive of the literature of the subject, but will be found on examination to be thoroughly representative.

TABLE OF CASES OF ORGANIC DISEASE OF THE TRICUSPID AND PULMONARY VALVES.

No.	Reporter and Reference.	Name, Age, Sex, Occupation.	Previous History and Duration of the Disease.	Symptoms in Circulatory System.	Symptoms in Respiratory System.	Effect of Digitalis or other remedy.	Post-mortem Condition of the Heart and other Organs.	General Character of the Disease.
1	Bertin, R. J Traité de mal du cœur, p. 197; 1824.	Williams Wiple, male, General. In the Army.	Had suffered long from symptoms of diseased heart, but became worse in consequence of the hardships of the American revolution.	Palpitation on the slightest exertion; "une grande anxiété;" continually cold extremities.	Not stated.	Not stated.	Dilatation of the right auricle; an ossified tricuspid valve closed the right auriculo-ventricular orifice and was pierced at its free edge by two holes, connected by an intervening piece an inch long, and about as broad; at its base another hole bordered (about iss-ait) on the left ventricle, at the level of the mitral valve. The left cavities were normal (dans l'état naturel).	Tricuspid obstruction.
2	Balthazar Foster, M.D. Clinical Medicine, pp. 324-330.	T. S. 35 years, male, " Sticker."	He referred his illness to an attack of rheumatic fever, which had occurred six years previously, and had disabled him more or less ever since. Had experienced epistaxis, disturbed sleep, dyspnoea on exertion, palpitation and pain at the ensiform cartilage. Improved for three weeks in hospital, when he caught bronchitis from cold; and, though he recovered somewhat, rose too soon, and died next day, with great dyspnoea, angina at ensiform cartilage, and lividity of surface.	Face puffy and dusky, lips slightly blue, jugular veins distended, slight undulatory pulsation in the right vein, occurring prior to the heart's systole; slight oedema of feet, no albuminuria; transverse dulness of heart slightly increased, apex below sixth rib; epigastric pulsation very distinct, thrill most appreciable at ensiform cartilage; to right of sternum a presystolic bruit, most distinct at base of ensiform cartilage, and propagated very little in any direction from this spot. No transmission into the great vessels; no accentuation of pulmonary second sound; pulse trace dicrotic; for some hours before death radial pulses very weak, and the left was first to become imperceptible.	Lungs normal on percussion, and breath sounds healthy. For the rest see "Previous History."	No treatment mentioned, except free cupping with stimulating on the day before his death.	Right auricle greatly distended. Pericardium adherent to front of heart; left cavities contained little blood; left ventricle slightly hypertrophied; right ventricle full of blood, but neither dilated nor hypertrophied; right auricle distended and hypertrophied, in some places a quarter of an inch thick; tricuspid segments adherent; orifice admitted the first finger, as far as the first joint, edges of orifice thick and rough, with calcareous spots on the auricular surface; pulmonary mitral and aortic valves healthy; orifice of aorta and left auriculo-ventricular opening narrowed (not said to be from disease). Liver small, granular; spleen large, congested; kidneys congested, but otherwise healthy. Serum in peritoneum.	Tricuspid obstruction.

TABLE OF CASES OF ORGANIC DISEASE OF THE TRICUSPID AND PULMONARY VALVES—continued.

No.	Reporter and Reference.	Name, Age, Sex, Occupation.	Previous History and Duration of the Disease.	Symptoms in Circulatory System.	Symptoms in Respiratory System.	Effect of Digitalis or other remedy.	Post-mortem Condition of the Heart and other Organs.	General Character of the Disease.
3	M. B. Tod, M.D., etc. Dublin Quarterly Journal, 1st Feb. vol. v. New series.	Edward Ingram, et. 21 years.	Two years and three months before admission, engaged in a riot, and was stabbed a little below the right mamma. Bled freely, and had plenty of melaena, and four weeks later hæmatemesis; the two latter conditions recurred repeatedly till within three months of death. During last month of life, rapid supervention of dropsy, beginning in the face and upper extremities. Died five days after admission, dyspnoea and dropsy being so great as to prevent examination.	Face and neck much swollen. Transverse dullness of heart increased. Visible and palpable pulsation at scrobiculus cordis. Systolic bellows murmur loud at apex and over sternum, and a second bruit, also systolic, but of a different tone, at the base, and in the course of the aorta. The second heart sound natural, but feeble; pulse small, thrready, compressible. Urine scanty, but free from albumen.	Respirations, forty per minute, loud and puerile at first; feeble and crepitant posteriorly. Position, semi-recumbent. Great.	Diuretics and mild stimulants employed without benefit.	Anasarca, pleuritic effusion, and ascites. The lungs did not collapse, and were highly cedematous. "The heart presented considerable hypertrophy, with dilatation of the right ventricle and auricle; the left cavities were rather larger than the normal size." Valves of left side healthy, as also pulmonary sigmoid valves. Anterior and largest segment of the tricuspid valve severed from its muscular papillares from rupture of the corresponding cordæ tendineæ. Musc. pap. atrophied. "The aorta and its branches were unusually small, and their coats much attenuated, so that they resembled in structure the pulmonary artery, which on the other hand partook of the dilatation and hypertrophy of the right cavities. Mucous membrane of stomach pale and thin. Condition of other organs unimportant.	Tricuspid regurgitation from rupture of cordæ tendineæ.
4	Fox, Wilson, M.D., etc. Trans. Path. Soc., London, vol. xxi. p. 101.	C. H., male, et. 50 years; Stableman.	Healthy, till he had "Rheumatism," five years before seen. For seven or eight months somewhat short-breathed. Seven weeks before seen, a bad cold increased dyspnoea, and he had at the same time cedema of lower extremities. Died fifteen days after admission.	Face, lips, hands, almost cyanotic; jugular and subclavian veins intensely distended; external jugulars singularly large; pulse hard, weak, regular, jerking; heart's impulse weak, regular, diffused; transverse dullness increased, liver enlarged; urine albuminous.	Continuous orthopnoea, cough frequent; lungs hyper-resonant except at bases, where they were bronchophonic and crepitant.	Not stated.	Right auricle enormously distended; inferior cavity ditto; right ventricle firmly contracted; muscle very firm; walls average $\frac{1}{8}$ inch thick; tricuspid orifice $\frac{1}{4}$ inches. Cordæ tendineæ distinctly shorter than usual; edges of segments thickened and allowing regurgitation; pulmonary artery healthy; left ventricle greatly enlarged and thickened; pulmonary veins distended with p.m. clots; mitral valve healthy; circumference, $\frac{1}{4}$ inches; aortic valves competent; upper lobes of lungs emphysematous; elsewhere pneumonic with embolic patches; liver engorged. Kidneys contracted, and granular.	Tricuspid regurgitation.
5	Ormerod, Dr. Edin. Med. and Surgical Journal, vol. lxx. 1846.	W. C., et. 28, male; Waterman.	Temperate; palpitation; dyspnoea on exertion for two years, but able to lie horizontally till the last. Died with dropsical symptoms in 1839.	No notable distension of superficial veins or jugular pulsation. Anasarca and ascites from time to time; systolic pulmonary bruit, which after a year became diastolic.	Refer to account of previous history.	Not stated.	Heart nearly twice its natural size; pulmonary valves agglutinated to a thick cartilaginous ring, leaving an orifice the size of a crow-quill; all the other valves healthy.	Pulmonary obstruction.
6	Begbie, J. W. Beale's Archives, No. 5; and Edin. Med. Journal, 1859-60.	W. W., male, et. 18; Light porter.	Always slightly short-breathed, especially after exertion; but could work actively. In hospital occasionally for breathlessness and palpitation; the latter seemed greatly functional. Fell while drunk, fractured his skull, and died in consequence.	Radial and other superficial pulses normal, 74; of good strength; no lividity of countenance; impulse not exaggerated, but readily appreciable; pulmonary systolic basic murmur ultimately diastolic.	Occasional attacks of breathlessness, always relieved by the care and diet of hospital residence.	Henbane and iron; belladonna plaster; care and diet always removed after dyspnoea and palpitation.	Pulmonary valves, consisting of four segments, one smaller than the rest; valve slightly incompetent; no hypertrophy or dilatation of the right ventricle; heart otherwise healthy. No account of other organs, whose condition was therefore probably unimportant.	

TABLE OF CASES OF ORGANIC DISEASE OF THE TRICUSPID AND PULMONARY VALVES—continued.

No.	Reporter and Reference.	Name, Age, Sex, Occupation.	Previous History and Duration of the Disease.	Symptoms in Circulatory System.	Symptoms in Respiratory System.	Effect of Digitalis or other remedy.	Post-mortem Condition of the Heart and other Organs.	General Character of the Disease.
7	Wilks, S., M.D., etc. Trans. Path. Soc., Lond. vol. xv. p. 74.	Joseph, S. at. 31 years; Cabman.	Rheumatism nine years before seen; since then a cabman and intemperate; last two years occasional dyspnoea, but not sufficient to incapacitate for work, until four months before death, when pulmonary symptoms appeared.	Double bruit in the pulmonary area, but the disease was not diagnosed. Pulse gave no indication of aortic regurgitation.	"Extensive disorganization of both lungs, of which he died."	Not stated.	Two segments of the pulmonary valve had almost disappeared; remaining one perfect, and not in any way thickened. Aortic valves adherent for a small portion of their surface. "The heart was of the usual size and form; the right ventricle not at all enlarged." Lungs disorganized. State of other organs not specified.	Pulmonary regurgitation.
8	Paget, J., F.R.C.S., Trans. Med. Chir. Soc., vol. xxvii. p. 182; and Ormerod, Edin. Med. and Surg. Jour., vol. lxxv. 1846.	Female, at. 20.	Poor, pale, haggard prostitute. Died seven weeks after admission to St Bartholomew's Hospital. Subject to fainting fits.	Rapid, feeble pulse; violent palpitation, with increased impulse; loud basic bellows murmur transmitted to the left shoulder; albuminuria; some ascites and edema of legs; before death signs of pleuro-pneumonia and effusion into chest. Shortly prior to decease purpurous spots made their appearance all over the body.	Slight cough. No expectoration; constantly lay on back, and did not appear to have any difficulty in breathing.	Not stated. Seemed to improve during first month of stay in hospital.	Right auricle somewhat dilated and hypertrophied; right ventricle much more so; tricuspid valve healthy; pulmonary valves, only two in number, thickened and opaque, with large ulcerations attached; granulations and some ulcerations in the pulmonary artery; mitral and aortic valves healthy; left auricle and ventricle "were healthy." Adhesions and serum in the pleura; pulmonary artery and its ramifications filled with coagula, partly ante-mortem; upper lobes of lungs emphysematous. In lower lobes about twenty compact masses of pulmonary apoplexy. Liver pale, otherwise healthy; pint of serum in peritoneum; spleen large, firm, with extravasated patches; "kidneys healthy, but pale."	Pulmonary obstruction and regurgitation.
9	Bertin, R. J. <i>op. cit.</i> , p. 199.	Male, at. 25 years; Mason.	No particulars beyond what may be inferred from his having reached the age stated, and the nature of his employment.	All the symptoms of a great obstacle to the circulation. "Bruit de soufflet" over all the front of the chest, loudest near the sternum.	Symptoms of respiratory embarrassment.	Digitalis and bleeding were tried in vain.	The right chambers of the heart "enormously hypertrophied." A column (pillar) of the right ventricle was applied across the orifice of the pulmonary artery, which it tended to retract (qu'il concourait à rétrécir); the orifice of the vessel was considerably narrowed, from change in the sigmoid valves, which formed a sort of fibrous porter's knot (bourrelet), the aperture in which was about $2\frac{1}{2}$ lines in diameter; the tricuspid valves were yellowish, thickened at their edges, adherent throughout, and partially ossified; at the commencement of the auricle, near the pulmonary artery, there was a hole 2 lines in diameter, which established a communication between that artery and the right ventricle ("ventricule droit," probably a mistake for <i>left</i> ventricle). The left chambers showed nothing peculiar (n'offraient rien d'extraordinaire).	Tricuspid and pulmonary obstruction.

TABLE OF CASES OF ORGANIC DISEASE OF THE TRICUSPID AND PULMONARY VALVES—*continued*.

No.	Reporter and Reference	Name, Age, Sex, Occupation.	Previous History and Duration of the Disease.	Symptoms in Circulatory System.	Symptoms in Respiratory System.	Effect of Digitalis or other remedy.	Post-mortem condition of the Heart and other Organs.	General Character of the Disease
10	Morison, Alexander, Trans. Path. Soc. Lond. Vol. xxvii. p. 88, <i>et seq.</i>	E. W. G. M., etc., etc.	Refer to full particulars of the case in the body of the thesis.					Tricuspid regurgitation; some tricuspid obstruction; pulmonary obstruction; and regurgitation.
11	Gairdner, W. T., M.D., etc., Clin. Med., p. 603, edition 1862; and B. Foster, <i>op. cit.</i> , p. 329.	Patrick M., at 20 years, male; Labourer.	Firmly built; tolerably active; neither livid nor dropsical. Died in 1872.	Jugular veins on both sides dilated, enlarged and undulating, but without being much distended with their contents. Tricuspid presystolic bruit.	Not stated.	Not stated.	Alive when Clin. Med. published, but on death (B. Foster) the tricuspid obstruction was found to be due, not to valvular disease, but to a tumour attached to the auriculo-ventricular orifice, after the manner of a ball valve. "There was no appreciable hypertrophy either of the right or left ventricle, and almost no dilatation" (The last sentence is copied from a post-card, dated 12th Dec 1877, which Professor Gairdner kindly addressed to me, in answer to a note asking for particulars, which have not, so far as I know, been published).	Tricuspid obstruction from floating tumour.
12	Kinglake, R. surgeon, Lond. Med. Journal, vol. x. p. iv. 1789; also Kreyzig, "Die Krankheiten des Herzens," p. 430, 1815.	Catherine Kinch, female, at 21 years.	Delicate; constant pain in side for several years; uneasy motion of the heart for three years; cause assigned, a jolt in a carriage! Two years under observation before death.	Enlargement of and viscid discharge from the left breast, without disease of its structure; later a similar discharge from the fauces; "uneasiness in heart and lungs, aggravated by transposition to a most formidable throbbing and sense of suffocating stricture, alternating with almost a state of inaction, and consequent syncope."	No cough, except when due to discharge in fauces, and by no means characteristic of pulmonary affection.	Three hundred and twelve venesections during two years, averaging 4 oz. each time; less found to be useless. "To describe the benefit gained by each bleeding would be to ex- hibit the difference between the most afflicting pain and comparative ease."	Pericardium and pleura full of fluid; more than half the cavities of the right auricle and ventricle obstructed by polyposous concretions, the largest as big as a walnut, and situated in the right auricle; half-an-inch beyond the pulmonary valves, a hard stony substance, weighing half a drachm. and diminishing the calibre of the vessel. Other organs apparently sound, with the exception of the stomach, which was thinned.	Tricuspid and probably pulmonary obstruction from polyposous concretions and pulmonary endarteritis.

The cases tabulated present a complete series of valvular disease, pure and mixed, and likewise show the etiology of morbid valves in the right heart to be essentially the same as that of similar affections in the left heart, for in the former, as in the latter, we see endocardial inflammation, traumatic rupture, and polypous obstruction producing valvular disorder. It is also satisfactory to note, that the diagnosis of the disease from physical signs in some of the above instances was as precise and accurate as the discrimination of analogous conditions in the left heart by similar methods of exploration; thus rescuing the diagnostic phenomena in question from the "region of romance," and constituting them an integral portion of the armamentarium of the educated physician.

As regards the age of the patients, it will be seen that there were none in the first decade, when they came under observation, though three were probably congenitally abnormal, one in the second, seven in the third, two in the fourth, none in the fifth, and one in the sixth. The age of Bertin's patient, General Wiple, is not stated, but the fact of his having been a general officer may justify our placing him in the sixth decade.

Ten of the patients were males, and only two females. Nine followed active or exposed employments, while the occupation of two was sedentary or indoor, and finally, that of one is not stated; but as the exception is Dr Tod's case of ruptured tricuspid valve, the occupation of the patient was probably active.

I shall now criticise more particularly the condition of the walls of the cavities of the heart as regards hypertrophy, together with the theory of the production of such accessory development, and its significance in relation to the duration of the disease (*i.e.*, on the life of the patient), and its influence upon the state of the pulmonary and general circulation.

To facilitate such an inquiry I have appended the following analysis on page 108 of the cases already tabulated.

HYPERTROPHY WITH OR WITHOUT DILATATION OF THE RIGHT VENTRICLE.

Dr Tod, in his account of Ingram's case in the *Dublin Quarterly Journal*, already quoted, regards hypertrophy of the right ventricle as the last of a series of compensating changes in cases in which there is regurgitation through the tricuspid orifice. The sequence of events, in Dr Tod's opinion, is dilatation with hypertrophy of the right auricle, retardation of the venous circulation, the latter being followed by dilatation and hypertrophy of the left ventricle and auricle—these again impeding the pulmonary circulation, which finally is the incentive to accessory development in the right ventricle. The analysis appended does not altogether support this theory. Dr Wilson Fox's case of tricuspid regurgitation certainly exhibited both right and left ventricular hypertrophy, but

ANALYTIC TABLE OF HYPERTROPHY, ETC.

No. of Case.	Name of Author.	Hypertrophy, with or without Dilatation of the Right Ventricle.	Hypertrophy, with or without Dilatation of Right Atricle.	Hypertrophy, with or without Dilatation of Left Ventricle.	Hypertrophy, with or without Dilatation of Left Atricle.	Dilatation alone of the Right Atricle.	Dilatation alone of the Left Atricle.	Duration of the Disease.	Degree of Embarrassment of the Pulmonary Circulation.	Degree of Embarrassment of the Systemic Circulation.	Character of the Disease.	Remarks.
1	Bertin.	?	?	0	0	0	0	"A long time."	Moderate.	Slight.	Tricusp. obs.	The numerals signify hypertrophy; numerals with a minus sign affixed, a doubtful degree of hypertrophy, which must nevertheless have been present; ciphers, the absence of hypertrophy; the mark of interrogation, cases in which the condition has not been reported. The terms "none," "slight," "moderate," "great," refer to the degree in which the secondary effects of circulatory obstruction have been noted, such as anasarca, ascites, albuminuria, pulmonary congestion, etc.
2	Foster.	0	1	1	0	0	0	Six years.	Moderate.	Moderate.	Do.	
3	Tod.	1	1	1	1	0	0	Two and a quarter years.	Great.	Moderate.	Tricusp. reg.	
4	Fox.	1	0	1	0	0	0	Five years.	Great.	Great.	Do.	
5	Ormerod.	1 -	1 -	1 -	1 -	?	?	Two years at least.	Moderate.	Occasionally great.	Pulm. obst.	
6	Begbie.	0	0	0	0	0	0	Congenital; 18 years.	Slight.	None.	Pulm. reg.	
7	Wilks.	0	0	0	0	0	0	Two years.	Moderate.	Moderate.	Do.	
8	Paget.	1	1	0	0	0	0	?	None.	Great.	Pulm. obst. & reg.	
9	Bertin.	1	1	0	0	0	0	Congenital; 25 years.	Great?	Great?	Tricusp. & reg.	
10	Morison.	1	1	0	0	0	0	Twelve and 3 years. Congenital.	Moderate, except in last 12 months, when great.	Slight; after digitalis great	Pulm. obst. Tr. obs. & reg. Pl. obs. & reg.	
11	Kinglake.	?	?	?	?	?	?	Three years at least.	Great.	Moderate.	Tr. Pl. obst.	
12	Gairdner.	0	0	0	0	0	0	Ten years.	Slight.	Slight.	Tricusp. obs.	

the weight of the evidence afforded by this case on this point is diminished by the concomitant state of the kidney, which was one of granular contraction. It is difficult to determine how much of the left ventricular hypertrophy may have been due to cardiac, and how much to renal obstruction, as it is likewise difficult to ascertain whether the state of the kidney was the result of passive congestion (the "stauungs nephritis" of the Germans) pure and simple, or of this coupled with an independent renal affection.

Tricuspid obstruction, however, may be regarded as having much the same effect upon the circulation generally as tricuspid regurgitation. In both there is obstruction to the proper entrance of blood into the right heart. Dr Foster's case of tricuspid stenosis argues the correctness of Dr Tod's theory, for in it the right auricle and left ventricle were hypertrophied, while the condition of the right ventricle was normal, and, excluding the accidental bronchitis of which the patient died, the condition of his lungs was comparatively good, that is, they exhibited no evidences of any important obstruction in the pulmonary circulation. It will be remembered, however, that in this case there was some narrowing of the aortic and left auriculo-ventricular orifices, which may in some degree have favoured left ventricular hypertrophy.

On the other hand, if we exclude Dr Ormerod's and Mr Kinglake's cases, of which I have been unable to obtain sufficiently minute details, the remainder allow one to question the universal applicability of Dr Tod's theory. It is true that in Dr Gairdner's case the tricuspid valves themselves were intact, and in the other cases the lesion was either at the pulmonary orifice or at both the pulmonary and tricuspid orifices, and in Bertin's first case at the tricuspid orifice alone; but the obstruction to the general circulation in these cases was (with the exception of Dr Begbie's case) ultimately as great as in the cases recorded by Drs Foster, Tod, and Fox. In none of these cases, however, do we find any record of a hypertrophic condition of the left chambers of the heart, while in Dr Wilks's case there is a remarkable absence of accessory growth in the right and left chambers alike, although the obstruction at the pulmonary orifice and in the lungs must have been very considerable.

Taking the results of all the cases tabulated, irrespective of the nature of the obstructive or regurgitant lesion, we find that in five both the right ventricle and auricle were hypertrophied, with or without accompanying dilatation; in four, these chambers were almost or quite normal; and of three we cannot speak positively; while, on the other hand, the left ventricle was hypertrophied in only three instances, was normal in seven, and doubtful in two. The left auricle, again, is recorded as having been hypertrophied in one, normal in nine, and doubtful in two. This statement, curiously enough, applies to the right auricle as regards simple dilatation. That dilatation here was subsequent to previous hypertrophy is

probable, but from the record we cannot positively conclude that such was the case. Finally, as regards simple dilatation of the left auricle, we have a series of negations; in two cases alone was this doubtful, and these cases were likewise doubtful in every other particular.

We see, then, that the left cavities are protected in the cases tabulated in the ratio of 3:5 as regards the left ventricle, and 1:5 as regards the left auricle when compared with their corresponding chambers to the right; while the proportion of cases of disease of the right heart in which both right and left cavities have escaped hypertrophy is 4:7 as regards the ventricles, and 4:9 as regards the auricles. Doubtful cases are excluded in both estimates.

These facts, as I have said, allow us to question the universal applicability of Dr Tod's theory, for, if we admit the testimony of Dr Foster's case in support of that theory, we must accept the testimony of the other cases, whether regurgitant or obstructive, against it. Moreover, in Dr Wilson Fox's case there was, as we have seen, a renal complication, which may or may not have had a cardiac origin, but which probably assisted in the hypertrophy of the left chambers, and Dr Tod's case was one of sudden rupture in an otherwise healthy heart, and in such cases as we know the retrograde congestion is frequently more intense than in cases where valvular incompetency has been more gradually established, in consequence of disease.¹

It is therefore probable, that we have in the right heart and in the venous section of the circulation a considerable force for the due propulsion of the blood through that portion of its circuit and pulmonary circulation, independently of the active propulsive force resident in the left side of the heart. This is likewise argued in those cases of valvular incompetency in the right heart, in which, notwithstanding the persistence of such for a lengthened period, there is no accessory development either of the right or left heart cavities, as, for example, in the cases recorded by Drs Begbie, Wilks, and Gairdner.

What it is my endeavour to demonstrate, then, is that although the left chambers may become hypertrophied in cases of valvular disease of the right heart, should the patients survive sufficiently long, there is an independent recuperative power in the right heart, the pathological evidence of which is compensatory hypertrophy of the right ventricle and auricle, independently of such change in the

¹ If the hypoplasial condition of the systemic arteries in Dr Tod's case was congenital, it may have been caused in the production of rupture of the cordæ tendineæ, by offering a serious impediment to the relief of the engorgement of the pulmonary and systemic venous circulation arising from the excitement and exertion incidental to participation in a riot. If, on the other hand, it was acquired, it was with greater probability the result of the diminished transmission of blood to the left heart, after injury to the tricuspid valve. The attenuation of the coats of the arteries in addition to their diminished calibre may perhaps argue in favour of the latter supposition, and this state of the arteries might then be regarded as a form of atrophy from insufficient use.

left heart, and that right ventricular hypertrophy may arise, without any impediment to pulmonary circulation due to dilated hypertrophy of the left chambers, as Dr Tod insisted.

One of these forces is undoubtedly the vertical upward pressure of the column of venous blood, which, according to a law of natural philosophy, is governed by the same laws as the vertical downward pressure (*Elementary Treatise on Physics, etc.*, by Ganot, translated by E. Atkinson, p. 70, 1868). This force, spoken of in some text-books of physiology as the force of "capillary pressure," together with the action of the left ventricle and resiliency of the elastic arteries on the one hand, and the force of the vacuum created by the respiratory movements on the other, are usually considered the chief factors in the maintenance of the circulation of the blood. But in addition to and in consequence of these, we have the force arising from the law which the blood like other fluids obeys, viz., the tendency of such substances to rise to their own level, or to the level of their source of supply, especially if the superincumbent atmospheric pressure be diminished or removed. It will be admitted that the vertical downward pressure of the column of arterial blood, independently of the systole of the left ventricle or elasticity of the aorta, comes into play at the origin of the descending aorta, the difference between the level of which and the entrance of the vena cava inferior into the right auricle is very considerable; so that the column of venous blood must have an impulse towards the pulmonary circulation independently of the force of respiration and action of the right chambers of the heart, etc., equal to the force of the vertical downward pressure of the arterial column, between the origin of the descending aorta and a point in that vessel on a level with the entrance of the inferior vena cava into the right auricle.

Yet another force, as I shall endeavour to prove elsewhere, is the force of an active diastole of the right ventricle exercising a measure of suction towards itself. Before discussing this point, however, it will be more convenient to examine the condition of the pulmonary circulation in cases of disease of the valves of the right heart, and the influence of such conditions on the anatomical state of the venous section of the circulation.

PATHOLOGICAL CONDITION OF THE LUNGS.

In seven of the cases tabulated the condition of the lungs is not specified; in one (Dr Wilks's case) the cause of the patient's death is stated to have been extensive disorganization of the lungs, a phthisis pulmonalis, which is not stated to have had any distinct relation to the state of the heart. Our information is therefore only to be derived from four out of twelve cases, viz., those recorded by Tod, Fox, Paget, and myself. In Dr Tod's case the lungs were highly œdematous and did not collapse, when the thorax was opened, while the cases recorded by Dr Wilson Fox, Mr (now Sir James) Paget, and myself, agreed in exhibiting embolic patches

throughout the lower lobes. Dr Fox's, like Sir James Paget's, presented emphysema of the upper lobes; in Dr Fox's the lungs were, with the exception of the upper lobes, pneumatic, while in mine they were retracted, crepitated imperfectly, and showed chronic consolidation at their bases.

The pulmonary hyperæmia, in these cases, is explicable in different ways. In Dr Tod's and Dr Fox's cases, we may accept Dr Tod's theory, that the pulmonary congestion was a consequence of hypertrophy and dilatation of the chambers of the left heart, but in the cases related by Sir James Paget and myself, we must look for another explanation, as the left auricle and ventricle were normal in both these instances. The theory I have advanced in the general remarks on the case of E. W. G. M. appears to me to explain matters sufficiently. As I have already stated, *a priori* reasoning would lead us to expect an anæmic rather than hyperæmic condition of these organs, where we have an obstruction to the circulation at a point before the part congested, together with a normal condition of the cavities of the left heart. The hyperæmia or impeded pulmonary circulation is probably, therefore, due in such cases to the *vis-a-tergo*, consisting mainly of the action of the right ventricle being inadequate to the due propulsion of the blood through the pulmonary arterial into the pulmonary venous radicles. At any rate, the facts related justify the belief, that pulmonary hyperæmia occurs in cases of valvular disease of the right heart independently of any defect in the chambers of the left heart; and, if we admit such a possibility, we likewise admit the possibility of the occurrence of compensatory hypertrophy of the right ventricle as one of the initial rather than final events in some cases belonging to the class under discussion.

Where the pulmonary semilunar valves are perfect, a like pulmonary hyperæmia from imperfect systolic impulse would probably result, though perhaps more slowly, in cases of tricuspid obstruction or regurgitation from an imperfectly filled condition of the right ventricle, too little blood either entering that chamber (stenosis), or being projected from it (owing to regurgitation) towards the pulmonary radicles. In other words, we have a primary stasis limited to the venous section of the circulation, and a recuperative power manifested by the compensatory development of the right heart, independently of any participation in these changes by the left heart, whereby the system copes successfully, occasionally for a lengthened period, with the plethora of the venous circulation, sometimes maintaining the health of the vital organs in a high degree of perfection, and allowing patients from such valvular disorders to follow various occupations with comparative comfort.

Looking at the whole question, then, we shall probably find that here, as in most other matters, the truth lies in the "happy mean." In a certain proportion of cases, Dr Tod's theory of the sequence of events is probably correct, while in others the accessory development of the right ventricle is probably one of the first of

the chain of secondary changes. Our data are at present too scanty to allow of our distinguishing these cases exactly, but it is probable that the order indicated by Dr Tod will be found in cases where the venous engorgement is greatest, and where such engorgement from its very intensity is most apparent in the systemic venous circulation. The experiments with the rubber apparatus, to be related afterwards, seem to indicate that tricuspid lesions are more calculated to engorge the systemic venous circulation than any other form of valvular lesion taken singly. The left ventricle, therefore, under these circumstances would be most liable to hypertrophy in cases of disease of the right heart, when the tricuspid valve is defective, as Dr Tod pointed out. I have already, however, mentioned cases, and especially that recorded by myself, where there must have been serious tricuspid deficiency for a length of time, and where, nevertheless, the left ventricle had escaped hypertrophy. In my own and the other cases which had so escaped, and of which we have sufficient information (with the exception of Drs Begbie and Wilks's cases already commented upon), the right ventricle was hypertrophied, whether from a precedence of the pulmonary valvular lesion, or from pulmonary hyperæmia, it is difficult to say; yet it is very probable that such right ventricular hypertrophy was the principal agent in retarding the development in the other portions of the circulatory apparatus of the anatomical changes which result from retrograde stasis.

The sequence of events in these two classes may therefore be stated as follows, although, of course, either chain must only rarely be found complete in individual cases:—

CLASS I.

1. Hypertrophy and dilatation of the right auricle.
2. Plethora of the systemic venous circulation, with disturbance of the functions of the parenchymatous organs.
3. Impeded arterial circulation.
4. Hypertrophy and dilatation of the left ventricle.
5. Hypertrophy and dilatation of the left auricle.
6. Congestion of the lower lobes of the lungs, with or without emphysema of the upper lobes.
7. Hypertrophy and dilatation of the right ventricle.
8. Increase of pulmonary congestion.
9. Increase of systemic venous congestion.
10. Death.

CLASS II.

1. Impeded pulmonary circulation, with congestion of the lower lobes, with or without emphysema of the upper lobes.
2. Hypertrophy and dilatation of the right ventricle.
3. Hypertrophy and dilatation of the right auricle.
4. Plethora of the systemic venous system with disturbance of the functions of the parenchymatous organs.
5. Impeded arterial circulation.
6. Hypertrophy and dilatation of the left ventricle.
7. Hypertrophy and dilatation of the left auricle.
8. Increase of pulmonary congestion.
9. Increase of systemic venous congestion.
10. Death.

We shall later investigate the influence which valvular disease of the right heart has upon the life of patients suffering from it, and shall then see in what measure the ultimate result is affected according as the secondary changes follow the order indicated in the one or the other of these two columns. In the meantime, as we have so far investigated the means employed by nature in coping with the problem of a difficult propulsion of the circulation arising from pathological causes, it will be instructive to examine the means she employs when an analogous difficulty is physiological. With this object, I purpose to institute a comparison between the circulatory apparatus and circulation of the sheep and that of man.

(To be continued.)

ARTICLE III.—*Case of Hystero-Epilepsy, aggravated by Pregnancy and necessitating Premature Labour.* By JOHN M'WATT, M.B., House-Surgeon, Royal Infirmary, Edinburgh.

HYSTERO-EPILEPSY in the non-pregnant woman has of late been attracting considerable attention. The occurrence in my practice of such a case, with the fits increased greatly in severity and frequency by pregnancy, and ceasing almost completely after parturition, has induced me to bring it under the notice of our Society.

The case is as follows :—Mrs B., aged 36, has had eight children at full term. Exactly ten years ago, when she was advanced in her fourth pregnancy, she took some kind of fits for the first time. During this labour she had none. Since then she has had very few attacks until about eighteen months ago, when she was seven months pregnant. As the pregnancy advanced the fits became so frequent and severe, weakening her so much, that she was expected to die. Ultimately she was delivered by forceps at full term of a dead child, and made a good recovery. From this time up till September last, when she ceased menstruating, she has been almost free from the fits; but after this, as her pregnancy advanced, they have become greatly intensified in every way. On 10th February of this year I was summoned at 11 P.M. to see her. On arriving I found the patient in a very low condition, with the pulse exceedingly weak and rapid; and, on speaking to her, could get no answer for some little time, owing to her semi-unconscious state. All the previous day she had passed from one fit into another, and was now getting much worse, as they were almost continuous. Her pupils did not seem to be contracted. Temperature could not be taken. Pulse 118. No appearance of labour. Foetal heart audible.

After consideration I determined to induce labour, seeing that—*1stly*, When not pregnant she had very few fits; *2dly*, Pregnancy increased the number and severity of the fits; *3dly*, As pregnancy advanced she got worse; *4thly*, Fits ceased during labour.

Character of the Fits.—Up till within late there has been no distinct aura. There are first convulsive movements of the limbs, trunk, and face. She buries her face in the blankets, and sometimes tears her hair at the beginning of the attack. The body is soon in a state of tonic spasm, with feet inverted, one crossing over the other. Face is not congested, and she never bites her tongue. She has incontinence of urine during the fits, and at other times. Pupils not altered. There is complete anæsthesia. There has never been any coma after an attack, except on the night I induced labour. The attack varies in duration from one to fifteen minutes. No albumen in urine. Vaginal examination, with pressure in the lateral fornices, induces these attacks, but suprapubic ovarian pressure has no effect in cutting them short.

Treatment.—Large doses of chloral were administered without effect. At 1 A.M., after having her anæsthetized, I made a careful vaginal examination, and found the os small and high up. No presenting part could be detected, and there was no appearance of labour. I now introduced with difficulty into the os a very small sponge-tent, leaving it in for $6\frac{1}{2}$ hours (7.30 A.M.) On removing it I found the cervical canal a little dilated, but still no appearance of labour. I then introduced a larger tent, which was left in for nine hours (4.30 P.M.) When removed the os admitted forefinger easily. No uterine contractions. A third tent was now used, and left in for five hours (9.30 P.M.) This excited uterine contractions. On removal the os admitted easily two fingers. I had at first determined to excite labour pains, and leave the rest to nature; but as the pulse was now 120, and the patient extremely weak, I resolved to complete it artificially. Accordingly, after having her chloroformed, I introduced the second size of Barnes's bags, and gave 5 grains of ergotin hypodermically. The uterus now contracted firmly, and the os dilated well. In twenty minutes I took out this bag, and replaced it by a larger size, leaving it also in for the same time. I went on thus dilating till I had the os well expanded. On examination I found the left shoulder presenting, head to left, and back posteriorly, and turned by conjoined manipulation, bringing down the left leg, after rupturing the membranes. Other 5 grains of ergotin hypodermically were given, and abdominal pressure used. The child, which was alive, was easily extracted, but died soon after birth. Placenta followed shortly. No post-partum hæmorrhage, the uterus remaining firmly contracted. From introduction of first sponge-tent till completion of labour, twenty-three hours.

The points of interest in the case are:—1. The aggravation of the hystero-epileptic attacks by pregnancy, and their increase in severity, *pari passu*, with its advance; 2. The cessation of the fits during labour, and between the pregnancies; 3. Such aggravation of the fits necessitating premature labour.

The patient made a good recovery, and is now quite well. After convalescence I examined her, and found, as already stated, that pressure in the lateral fornices brought on severe hystero-epileptic attacks.

ARTICLE IV.—*Case of Prolapse of Uterus, with Eversion of Vagina, Complicating Labour.* By T. GOODALL NASMYTH, M.B., C.M., Ed.

(Read before the Obstetrical Society, 23d April 1879.)

THE patient whose case I am about to narrate was a middle-aged woman, the mother of several children, and, as I was afterwards informed, had considerable difficulty with her confinements prior to the one I attended her for. This arose from the fact, quite well known to her, that she suffered from prolapse of the uterus, which had occurred several years ago, and had not prevented her from becoming pregnant, and never led to abortion, but was the cause of considerable inconvenience, as was to be expected. She consulted me in the early months of pregnancy, and I applied a pessary, which relieved her for some time, but had to be discontinued as pregnancy advanced. When labour began, she was attended by a midwife, who waited patiently for ten hours, till a state of alarm seized her, and I was summoned, happening to be in the village at the time. When I entered the house consternation was depicted on the midwife's face, and she most wofully informed me that her patient had been in labour for ten hours, and there was "something else than a bairn coming." I was quite prepared for a "missing link," or other anomaly, but was very much pleased to find that the anomaly was the everted vagina, the anterior and posterior walls of which were very much swollen and cedematous, and presented a very unnatural appearance. Passing my fingers through this canal formed by the anterior and posterior vaginal walls I found the cervix nearly at the true ostium vaginae, but it could be pushed far up into the cavity of the pelvis, till the head of the child was reached at the pelvic brim. This introduction carried the everted vagina within the true vagina, but it came down as soon as a contraction of the uterus came on, or when the woman coughed, which she frequently did, having an acute attack of bronchitis. The os was not dilated, and felt very firm and unyielding, although labour had gone on for ten hours; there was no advance of the first stage, from the fact that the uterus acted at a great disadvantage, having nothing to oppose its contractions at the floor of the pelvis, from the existing state of the parts.

The first thing to be done, I considered, was to dilate the os, and having no means at hand of doing so except by my fingers, and only when a pain came on, as in the intervals an attempt to dilate pushed the cervix beyond reach, I simply prevented the descent of the os during a contraction, and introduced my finger into it at the same time. After three or four hours' work the os was large enough to allow my four fingers through it, so that the time for the second part had arrived. I tried to administer chloroform, but whenever the woman smelt it she became very sick, and

was nearly choked while vomiting, so that I was very much at a disadvantage from being unable to use the anæsthetic. I did not think of trying the long forceps, as the head was far up in the pelvis, and what was worse, the state of the vagina would have interfered with the adjustment of the lock, and the longer I waited the swelling and œdema would have increased, especially if the head were lower down in the pelvic cavity, so that I determined to perform version, and did so, under very great disadvantages. The pelvis was not too roomy. The patient was not under chloroform, and I had a sore finger, so that the pain I endured was nearly as acute as the poor woman's. The child was dead, and the woman herself had a very narrow escape, as she was seized with double pneumonia a few days after her confinement. She, however, recovered, and is now well.

ARTICLE V.—*Case of Recurrent Tumours in the Parotid Region.*

Under the care of Mr JOSEPH BELL, Royal Infirmary, Edinburgh.
By G. T. ATKINSON, M.B., C.M.

MRS GIFFEN, æt. 47, was admitted into Ward X. S. on 29th March 1879, complaining of a swelling in region of right parotid gland. She only suffered from pain at intervals.

Previous History.—Three and a half years ago patient was admitted into Ward I. S. for a tumour in same region about the size of a half orange. This was removed by a crucial incision by Mr Bell. The seventh pair of nerves was found stretched over the surface of the tumour, each branch being in turn carefully dissected out, and held aside by blunt hooks, only one small branch being cut across. The after effects were nothing to speak of, and patient left hospital in ten days, the wound being quite healed.

History of Present Growth.—The upper tumour was first noticed last May about the size of a pea. This did not increase rapidly till about a month previous to admission. The lower tumour began more than a year ago. Neither of the swellings gave her any pain, but the movements of the jaw were interfered with.

Family History.—Satisfactory.

State on Admission.—Two small tumours felt on right parotid region, not freely movable. Movements of jaw affected. No pain on pressure. Patient otherwise quite healthy.

Operation on 1st April.—Patient being placed under the influence of chloroform, a crucial incision was made over the surface of the tumour thus +, the flaps being held aside by blunt hooks, and all bleeding points secured. The lower tumour was first removed, and was found adherent to the sheath of the carotid artery. The upper one was adherent to the periosteum of the jaw, and required the aid of the periosteum scraper for its removal.

The seventh pair was on this occasion freely involved in the

mass of the tumours, therefore section of several branches was inevitable.

The wound was brought together by horse-hair sutures, and a drainage tube inserted, a sponge being applied over the wound.

Progress.—Patient had no bad symptoms, nor any rise of temperature. She left the hospital soon after, the wound being quite healed.

On this occasion the after effects were a “wooden” look of the right cheek, and inability to whistle and to close the right eye.

The tumours were examined microscopically by D. J. Hamilton, Esq., M.B., and the following is his report:—

The tumour contained several cysts, and was hard and almost cartilage-like in consistence. It consisted of a portion of the parotid gland in an abnormal condition, viz., that the acini of the gland were distended with proliferating epithelium highly nucleated, and not fatty. The limiting membrane of the gland acini was, so far as could be seen, always preserved, but it looked very much as if in a short time it would give way, and allow the epithelial cells to pass into the surrounding parts.

The cysts were caused by the blocking up of ducts by the epithelium, and the accumulation of retained secretion. The tumour was essentially a simple glandular one, but was on the eve of forming a cancerous infiltration, and it is quite possible that this may have actually occurred at some part not examined.

ARTICLE VI.—*Treatment of Puerperal Septicæmia.* By A. BAIRD, M.D., Perth.

(Read before the Obstetrical Society of Edinburgh, 25th June 1879.)

I RECENTLY had an opportunity of bringing under your notice some remarks on the etiology of puerperal fever, and to-night I would refer to perhaps the more important question of its treatment. In doing so I will endeavour to confine myself to points brought out by cases spoken of in my last paper, and refer more especially to one case in which Warburg's tincture was successfully employed. Arguing, as I then did, that the septic poison may be either auto- or heterogenetic, it is evidently of the first importance to attend to the prophylactic measures. Among the first of these I would place the avoidance of any unnecessary delay during the second stage, as assuredly when downbearing is considerable and progress but slight, the condition of the parts becomes exceedingly prone to decomposition, even while the labour is still unfinished, and when the accoucheur's hands are in frequent contact with the parts. At all times rigid attention to cleanliness by frequent change of linen and intra-uterine injection of antiseptic agencies, such as Condy's fluid, are highly advisable.

When the fever has actually set in, certain cases which I related

as being treated by a friend were said to be cut short by a considerable abstraction of blood, and if at any time of service it would surely be at a very early stage, while probably the pulse was good, and the tendency to peritonitis well marked. Schroeder and certain authorities whom he quotes are of opinion that purgatives given very freely are of much use throughout; but except at the onset, I fancy that most of us have too great fear of diarrhœa to tempt it in our cases. The treatment of the diarrhœa at times becomes one of the most important and difficult points, and I know not if it has been proven that septic matter can be carried off by any purgative. In one of my cases motions were passed very frequently, and quite involuntarily. Moreover, sharp and repeated purges of calomel, senna, or castor-oil in large quantities would have a tendency to induce peritonitis, if it did not already co-exist with the fever. In most of our town cases the type soon passes to the asthenic form, when bleeding and purging seem alike inadmissible. As a general rule stimulants are well borne, and large quantities of wine or brandy may be absolutely required.

The reduction of the temperature is of course one of our chief purposes, and hence various methods have been used to bring about that result. A case, which I at the first meeting of the session described, bears so largely upon this point, that I may be permitted to give a fuller history than was necessary at that time. In this case the second stage was rather slow, and for some days, while there was no increase of temperature, the pulse kept much too quick. After a slight rigor, I found tenderness over the left ovarian region and slight tympanitis. Pulse 120; temperature 102°. After hot fomentations, with the addition of some turpentine, and an enema also containing turpentine, a pleasant night was spent. This was on the 31st of May. During the next few days no very active treatment was required beyond that now mentioned, but the vagina and uterus were carefully washed out with a solution of Condyl's fluid. On 4th June, the temperature being on the increase, and standing at 103°·4, I ordered 15 gr. of soda salicylate to be given every two hours till the temperature was reduced. The effect of three doses was a recession of the temperature to 100°·5, but beyond this I could not push the fall by means of the soda. The pulse came down to 90. When the salicylate was withheld we had again a rise of temperature, and I continued this treatment till the 8th with favourable results. On each of these days, at whatever hour the treatment was begun, the same result occurred. When on the 8th the nurse sent me a thermometer marking 103°, I determined upon the use of quinine, and took with me 15 grs. of the sulphate. This I gave at 3 P.M. in a half-glass of whisky, and the full physiological effects were shown, the patient's hearing, indeed, being so much affected that she feared it had been permanently destroyed. At 7 P.M. I was astonished to find that the temperature had actually risen, and now stood at 105°, without

any aggravation of local symptoms. A return to the salicylate brought the temperature again to $100^{\circ}5$ on the morning of the 9th. On the 8th I had telegraphed to Edinburgh for a supply of Dr Warburg's tincture as a remedy tried successfully in an extremely bad case by Dr Playfair of London. In his case the temperature refused to yield to a remarkably long trial of the cold pack, but declined rapidly and permanently after the use of the tincture. During the afternoon of the 9th the temperature rose thus:—Noon, 101° ; 2 P.M., 103° ; 4 P.M., 105° ; 6 P.M., 104° ; 8 P.M., 105° ; 11 P.M., 104° . At 11.30 I gave in one dose a half-ounce of Warburg, and a very careful nurse sent me in the morning the following record:—At 12.30 A.M., 100° ; at 1.30, 101° ; at 3 A.M., 100° ; at 7 A.M., 100° . Patient otherwise much improved. The dry hot skin had given place to a considerable perspiration, and the pulse had both decreased in rate and increased in volume. During the course of the case the diarrhoea required repeated doses of opium, as well as starch injections and other methods of treatment, but was throughout most intractable. Large quantities of brandy (often a pint per day) was given, and I had pushed wet cold as far as the patient would allow of it. So far as I know, but very few cases of puerperal septicæmia treated by Warburg's tincture have been recorded. In my case its success in lowering the temperature was all that could be wished, as, with the exception of a rise to 102° two days after, through some difficulty in micturition, the case went on rapidly to complete recovery. The tincture was, I believe, largely tried in the Bristol Royal Infirmary, and given up as of no value in reducing temperature; but I believe that the trials, though numerous, were confined to cases of acute rheumatism. The remedy has only lately been introduced to scientific medicine, after a long apprenticeship among quacks—chiefly Indian. Drs Maclean and Broadbent, in this country, have brought it forward with very great hopes, and now we await the results when tested clinically. In this case I had certainly all but lost hope, and with a temperature reaching 105° , a pulse of 130, severe diarrhoea, difficulty of breathing, extreme anxiety of countenance, and very dry skin, members of this Society will agree that my fears were not ill-founded, and may, I trust, give the remedy a further trial in such cases. You are all no doubt familiar with the long formula, and asquinine appears the most likely remedy contained in it, I will not attempt to say why in my case it failed when given alone, and succeeded when given in a much smaller dose in Warburg's tincture. The price has been a very serious drawback to its use, except in very bad cases; but lately chemists are offering a much cheaper form, and Dr Bramwell of Perth, having tried Corbyn and Stacey's in a serious case of post-partum septicæmia, the remedy being used at an early stage of the disease, arrested the high temperature, and removed all the alarming symptoms in the most prompt and satisfactory manner.

ARTICLE VII.—*Note of a Case of Labour, complicated with Locomotor Ataxia.* By ANGUS MACDONALD, M.D., Physician to the Royal Maternity Hospital, Edinburgh, etc.

(*Read before the Obstetrical Society of Edinburgh, 28th May 1879.*)

THERE are no chapters in the range of midwifery so far behind as those upon the pathology of pregnancy and parturition. There are also, perhaps, no portions of the subject about which so little is accurately known as those bearing upon the nervous complications of pregnancy and parturition.

On these grounds I have deemed it of sufficient importance to place on record the following case, although, obstetrically considered in the strictest sense of that word, it presented no special attraction:—

J. B., primipara, the subject of this note, was a patient in the Royal Maternity Hospital during March of the present year. She usually resides at Ayr, whence she was admitted to the Maternity on the 10th of March 1879.

She reported that four years ago, whilst engaged washing clothes in a barn, she got very wet and cold. Since that period she has never felt quite well. She soon found that she did not possess full control over her lower limbs, and at the same time experienced a sensation as if a cord had been tied round both lower limbs. By-and-by she was unable to stand in the dark without falling. These symptoms continued for a year to get worse, but since that period have remained stationary. She did not think that they were in any degree aggravated by the pregnancy.

The patient was in labour on her admission to the Maternity. The head presented the vertex in the left occipito-anterior position. The first stage was slow, lasting for seventeen hours, but otherwise presented nothing peculiar. The second stage also was long. After it had lasted five hours the patient began to feel exhausted, and exhibit hysterical symptoms. In consequence of this Dr M'Watt, one of the resident medical officers, abbreviated the labour by the use of forceps when the head had passed well down towards the floor of the pelvis. The third stage in its turn presented certain peculiarities. It was found impossible to expel the placenta by the Credé method, the usual plan adopted in the Maternity Hospital.

After waiting for an hour, Dr M'Watt examined and found the lower segment of the uterus powerfully contracted, and the placenta retained. Not being able to pass his hand through the strictured portion without causing the patient an undue amount of pain, Dr M'Watt put her under the influence of chloroform, and then gradually introduced his hand into the uterus and removed the afterbirth, which was partially adherent. Throughout its structure there were scattered numerous calcareous particles. There was no post-partum hæmorrhage.

At the time of the delivery I was confined to my room by indisposition, so that I did not see the patient until she was convales-

cent. There was some incontinence of urine for four days, but the patient otherwise made a good recovery.

On the ninth day after delivery, when attempting to rise, she was entirely unable to walk, but gradually improved, and by the time she left the house, which she did on the twenty-first day, she had regained as much power over her lower limbs as she had possessed previously to the commencement of her pregnancy.

On 21st March my attention was directed to her by Dr M'Watt, who had made out her case to be one of locomotor ataxia. The following unmistakable symptoms were then observed to be present:—

The patient had only an imperfect control over the movements of her lower limbs, yet there was no real loss of muscular force, for when she lay in bed, and was asked to extend the limb powerfully, it was found that it required the exertion of great force to bend the knee against her will. Her gait, however, was tottering, and she was unable to stand when asked to shut her eyes and put her feet together. There was decided loss of common sensation in the legs. There was also complete loss of tendon reflex in both legs, as shown when the patellar tendon was smartly struck, while the limbs dangled over the edge of the bed. The upper limbs appeared unaffected, and there was apparently no loss of power in any part of the body.

The patient's sight was good. There was no history of either convulsion or of squinting. In short, the patient, barring the defective power of co-ordinating the muscles of the lower limbs, appeared perfectly healthy.

The above case, as already stated, presents little to remark upon, except that it presents an example of the rare combination of locomotor ataxia with pregnancy. I have been unable to find any recorded case of the combination. It would further appear that the pregnancy in this instance had little or any effect upon the disease, except that towards the end of the term it aggravated the imperfect co-ordination of the lower limbs. But so soon as the lying-in period was completed the patient rapidly returned to a condition apparently no worse than that in which she was placed when the pregnancy began.

It is difficult to say whether or not the peculiar condition of the patient's nervous system had anything to do with the supervention of hour-glass contraction. In my opinion the probability is that it had. In the record of a case recently read by me before this Society, I endeavoured to show that severespasmodic contraction of the lower uterine segment, which I had observed to be present, most probably depended upon a neurosis affecting the nervous supply to the perineum, vagina, and lower uterine segment.

Now, I can hardly regard as an accidental symptom the supervention of spasmodic contraction of the lower uterine segment in the case before us. In truth, I am inclined to look upon the irregular condition of the uterine contraction in the present case as having been probably determined by the sclerosis of the posterior

columns, and thus as in a great measure traceable to the locomotor ataxia. Such an opinion, however, is nearly impossible to substantiate. All that can fairly be inferred from the record is, that a patient suffering from well-marked but not severe locomotor ataxia may pass through pregnancy and parturition without either the ataxia or the pregnancy being essentially modified by any reciprocal action of the one upon the other.

ARTICLE VIII.—*On the Adenoid Tumours of the Naso-Pharynx, and their Influence on the Hearing, Breathing, and Phonation, and on their Treatment.* By Dr LÖEWENBERG, Paris. Abridged and translated, by permission of the Author, by JAMES PATTERSON CASSELLS, M.D., M.R.C.S. Lond., Fellow of the Faculty of Physicians and Surgeons, Surgeon to the Glasgow Dispensary for the Diseases of the Ear, Aural-Surgeon to the Glasgow Royal Infirmary, and Lecturer on Aural-Surgery in the Royal Infirmary School of Medicine, Glasgow.

(Concluded from page 44.)

2. *The Ablation of the Adenoid Tumours.*—The ablation of these tumours has been practised according to several methods by various authors who have interested themselves in this question. By experimenting with these several proceedings in a great number of cases, we have been led to imagine a *new method*, which appears to us to possess some advantages, and which we shall describe after having spoken of those already known.

(a.) *The Employment of the Curette with Cutting Edges.*—The use of such a curette with cutting edges is a proceeding which has often yielded us good results.

Our instrument is shaped like a little spoon, the bowl of which is in length .10 cm., its breadth in its transverse diameter .007 mm., and of which the edges are cutting; this is attached to a steel stem .15 cm. in length. It has a double curvature similar to that of the *porte-caustique*, and which resembles an “S” in its appearance.

When proceeding to use this curette, it is necessary to depress the tongue with an instrument *ad hoc*, if the patient cannot be trusted to maintain a perfect control over that member. Next, the pharyngeal mirror is introduced into the pharynx, and one operates aided by the view of the parts obtained in this way. With those patients who cannot permit of this mode of proceeding, it suffices, in such cases, if the operator places his left index finger into the pharynx, in order to fix the tumours as well as to conduct the instrument (curette). The vegetations are then either cut or scraped off. The hæmorrhage which follows the operation is sometimes very abundant on account of the vascularity of the tumours, but it does not long resist the application of the naso-pharyngeal

douche, composed of nearly cold water, or better, of a solution of alum sulphate.

Generally there is no other treatment required in the cases in which the curette is used for the removal of those tumours; sometimes, however, slight cauterizations are useful in terminating the cure in a definite and satisfactory manner.

(b.) *Removal of the Tumours by the Crushing and Bruising of them.*—When pedunculated the tumours can be removed by crushing, and by bruising when they are sessile. In the first case the loop of a steel wire is passed round the pedicle of the growth, by which means the vegetation is cut or strangled, so as to remove the entire excrescence. The instrument which carries the loop should be very strong, and sufficiently curved to enable it to reach the vault of the pharynx.

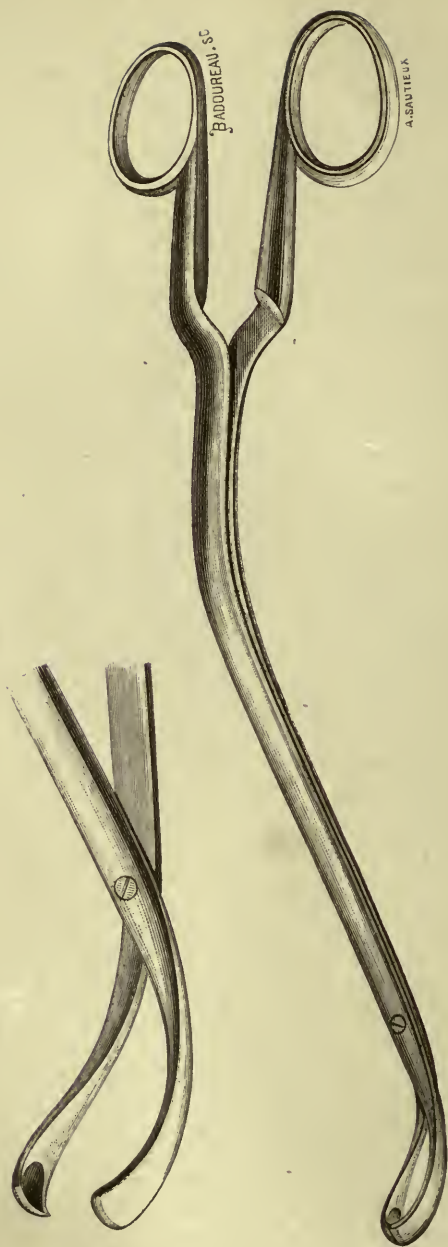
Instruments of this kind, although constructed from different models, rest always on the same principle, and all resemble, except in strength and curvatures, the *écraseur* of Maisonneuve and that invented by Wilde of Dublin, for operating upon aural polypi, and which is frequently used by us with complete success.

Sessile tumours can be operated upon by the aid of polypus forceps, having an appropriate curvature, like, for example, the instruments invented by our *confrère* Ch. Fauvel. The tumour is seized between the jaws of the instrument, and strongly compressed, in order to bruise it, then the pressure is relaxed and the instrument withdrawn, leaving in its place *détritus*, which will come away of itself; if necessary the bruising is repeated after the inflammation caused by the preceding operation has ceased, and the tissues, which had mortified by the violent compression, have come away. The forceps used by Stoerk (*Klinik der Krankheiten des Kehlkopfs, etc.* Stuttgart, 1876. Fig. 37, p. 98) differs from other instruments of that kind in this respect, that each branch is divided into two parts, which are reunited by an articulation. In the employment of the forceps those two pieces are placed at an angle which will facilitate their introduction. Once the instrument *in situ*, and after having seized the tumour, Stoerk straightens the whole by means of two wires, so that the two pieces, of which each branch is composed seem to form one straight stem.

The forceps which are used to bruise sessile tumours can also be employed for strangling the pedicles of the vegetations of the first category, and to remove them thus at one sitting.

We have conceived a modification of our cutting forceps with this double object in view. The sharp blades of our instrument are replaced by strong and dentated jaws, which permit either of crushing or of bruising the tumours in the way above indicated.

Thus modified, our instrument appears to us to be very easily managed, not only with vegetations, but also for true polypi of the naso-pharynx. It is necessary to take the same precautions in the crushing of these vegetations as were necessary when their re-



LEWENBERG'S NASO-PHARYNGEAL FORCEPS.

moval is effected by the curette, in respect to the use of the rhinoscope, to palpation of the tumours, and to danger of excessive hæmorrhage. These precautions should also be observed in the method of operating which we are now going to treat of.

In cases of soft tumours a complete cure is sometimes effected by crushing them with the finger.

(c.) *The Annular Knife*.—Meyer recommends the use of a little oval ring, the anterior and interior edges of which are sharp. That little instrument is formed of a flat and thin blade, .002 mm. in width, .01 cm. in its transverse axis, and .007 mm. in the axis perpendicular to the latter. The ring is fixed below a slight curvature to a strong metal handle, 11 cm. long, terminated by an ebony stem of the same length.

Here is how the instrument is used:—By the right hand it is passed through the nostril corresponding to the seat of the affection into the pharynx, the index finger of the left hand then enters by the buccal cavity into the naso-pharynx, in order to fix the vegetations and to press them in front of the sharp edge of the knife. As to the consequences of the operation, these are similar to those which follow the use of the curette.

In regard to the value of Meyer's instrument, we must confess that we have been obliged to give up its use, on account of the impossibility of using it owing to the extreme pain which it caused in traversing the nasal passages, or because the tumour, owing to its seat, may have so injured the interior of the nose as to impede the free movement of the stem of the instrument.

(d.) *The Author's Operation for the Removal of Adenoid Tumours*.—Of all the operative proceedings that we have used, the employment of the curette seems to be the easiest and most efficacious, but at the same time its use is not altogether free from inconvenience. The introduction even of this instrument with sharp edges may become dangerous in patients who are restless, in which case the already mentioned precautions are taken. Again, once the curette is introduced into the naso-pharynx injuries may be caused by its going beyond the limits of the tumour. To try and avoid these accidents, we have replaced the instrument already known by an invention of our own, which is less hurtful and more easily managed, and being at the same time as efficacious as the former. It is a pair of forceps terminated by two sharp blades, whose edges lie closely together as soon as the instrument is shut. It has a double curvature like S, the same as the *curette* and *porte-caustique*. The articulation of the instrument is placed close to the jaws in order to preserve a greater length of the branches, which acts as a powerful lever and allows of cutting easily. The points cut by being drawn together. They are slightly rounded and excavated in their inner face.

The following is how this instrument is used:—Guided by the rhinoscopic mirror, or by the left index finger, the forceps are

introduced closed, they are then opened and the vegetations are cut as near to their base as possible. One cut is sufficient to detach a thin pedicle or the base of a small sessile vegetation; large tumours naturally require several cuts. It is the same for true naso-pharyngeal polypi, which can also be removed by means of our instrument. Once the tumours are cut the forceps are withdrawn, bringing with them generally the uprooted vegetations.

Having frequently used our forceps with complete success, we recommend the use of them to those who may have occasion to operate upon adenoid tumours or polypus of the naso-pharynx.

(e.) *The Galvano-Cautique.*—A platina wire, rendered incandescent by the continuous current, can be also used to destroy adenoid tumours. Pedunculated vegetations are separated from the parts by this *galvano-éraseur*, and sessile tumours are destroyed by the *galvano-cautère*.

We have not yet tried the *thermo-cautère* for this special purpose. In cases in which one would wish to use it we would propose to cover the instrument, with the exception of the part that ought to act, with a material which is heat-resisting as well as non-conducting. We advise the same for the *galvano-caustique* in order to protect the healthy tissues; the external periphery of the loop of the platina wire could also be covered in the same way.

(C.) *Treatment of Concomitant and Consecutive Affections.*

1. *Treatment of Naso-Pharyngeal Affections.*—The following lines do not pretend to contain an enumeration of all kinds of medication used to combat the affections above mentioned, as a statement of them may be found in works devoted specially to that subject. We only wish to communicate here what a long personal experience has made us appreciate as useful in the treatment of concomitant affections of adenoid tumours of the pharynx.

We have seen that a chronic inflammation of the internal lining membrane of the pharynx and the neighbouring cavities co-exists in a great number of cases with the adenoid tumours of the posterior cavities of the nasal passages; in these cases we have always found a pharyngitis, and very often a rhinitis.

It is very necessary to treat these different groups of disorders independently of the measures taken in regard to the adenoid tumours themselves; the following are the measures to be used in such circumstances:—

For the nose and naso-bucco-pharynx we employ alum, an excellent astringent in gargles, and in the naso-pharyngeal douche. The alum gargle is executed in the manner already spoken of in a preceding section of this paper.

The naso-pharyngeal injection necessitates some special precautions, and which are very important for the success of this proceeding. The use of pure water, without the addition of table-salt, must be avoided; for purely detersive injections, 1 to 3 % of

sodium chlorate is used. An equal portion of salt is added also to the astringent solutions, because, without salt, water is badly supported by the pituitary membrane, probably on account of a too violent osmosis (Graham, in *Philosophical Transactions*, 1856, part i., "On the Diffusion of Liquids"). Alum is used for the naso-pharyngeal douche in doses of 1. to 3 %. Every liquid used, according to this medication, should be tepid, so that the pharyngeal mucous membrane may be able to bear it. The astringent solution can also be used in pulverization, but then it wants the energetic, deterrent, and impulsive action, which is so indispensable for expelling the secreted productions, oftentimes so abundant, compact, and adherent, that without the help of Weber's douche all the efforts of the patient would not succeed in expelling them. If alum or other astringents, as tannin, for example, be not sufficient for a complete cure, their action may be strengthened by local cauterizations; it will be necessary to have recourse to the latter when there exist some pharyngeal granulations or hypertrophy of the pituitary membrane. The *galvano-caustique* is frequently used for these cauterizations.

2. *Measures to be taken against Mouth-breathing and its Consequences.*—The re-establishing of nasal respiration can only be expected to take place after the entire removal of the adenoid tumours. But even their removal, as we have already seen, is not sufficient in the majority of cases, especially in young subjects, in whom the habit of breathing by the mouth is often deeply rooted. What should be done in such a case, when the nasal passages are sufficiently opened for the purposes of breathing? In the first place we should encourage the child to combat the habit of mouth-breathing by a careful *surveillance*; and secondly, from time to time, when this mode of breathing is persisted in, we should remind the patient of that circumstance, and call frequently for its cessation. Thus, by continual reiteration the habit may be broken. Guye, of Amsterdam, proposes to close the mouth of the child by covering it with an impervious mouth-piece, in imitation of the English respirator. But the drawbacks to the use of this contrivance are apparent. It hinders speaking, and when the nasal passages have not attained to a normal state, or when they are stuffed with cold, and breathing through them becomes difficult or impossible, it cannot be worn. How also will the generally abundant pharyngeal secretion be expelled, or the saliva?

We have suggested a gentler means of combating this habit, and which has given us good results. It consists in the use of a simple *mentonnière*, which supports the chin, and keeps the jaws and the teeth together. The advantages of this instrument are: it permits of some degree of breathing when the nasal passages are stuffed, and a sufficient amount of speaking. We recommend this instrument to our *confrères*, because it can compel the wearer of it with gentleness to respire by the nasal passages without imposing

a too great restraint. Its use during the night in cases of snoring is recommended.

Defective Pronunciation can be combated by reading aloud, which is a very useful gymnastic for the whole respiratory tract, and for regulating the mechanism of respiration.

The Thoracic Deformities can be remedied when this is possible, by trying a course of rational gymnastics under the care of one who is specially familiar with the practice of orthopœdia.

Electricity can also be used with advantage in the treatment of these deformities.

3. *The Treatment of the Affections of the Ear.*—The affections of the ear caused by these adenoid tumours require to be treated according to their nature and to their intensity. There are two groups of those affections, viz., simple catarrh and purulent otitis of the middle ear. For the cure of both of these conditions the previous removal of the tumours becomes necessary. Then each group of these ear diseases requires its own special cure, which we are now about to speak of in a brief way.

(a.) *Treatment of Catarrhal Inflammation of the Middle Ear.*—The most frequent of the auricular troubles arising in the course of an adenoid affection is that of simple chronic catarrhal inflammation.

Treatment.—By means of the catheter insufflations of air into the Eustachian tube and into the tympanum; the benefiting effect of the air douche may be prolonged by substituting for the ordinary atmospheric air hydrogen, or rather air having been expired and inspired alternately four or five times, according to the proceedings advised by us in our *mémoire*, “De l'échange de gaz,” etc.

Air or other gases, and even vapours, can be insufflated into the middle ear by means of Politzer's proceeding. The method of our Austrian *confrère* is performed in the following manner:—A tube communicating with a caoutchouc bag is introduced into a nostril, and all communication between the interior of the nasal cavities and the surrounding air is cut off by pinching the nose of the patient. The edge of the tube should not go further into the nostril than to the depth of .01 cm. at the most. The bag is then compressed, and its gaseous contents are injected, while the patient performs the act of deglutition. The latter facilitates the operation in two ways: 1. It raises the curtain of the palate, and shuts the naso-pharynx towards the buccal-pharynx. 2. It diminishes the resistance in the Eustachian tube, and gives more easy access to the tympanum.

In a great number of cases this proceeding may replace the catheter, the execution of which operation is more unpleasant for the patient; but Politzer's method is specially indispensable in the cases of little children.

During late years several modifications of this proceeding have been proposed, all tending to effect the raising of the curtain of the palate by pronouncing certain letters, rather than by performing the act of deglutition. But it must not be forgotten that those modifications do not, like swallowing, open the Eustachian tube—a

circumstance not less important for the success of the operation than the raising of the curtain of the palate.

We use the proceeding, however, which consists of making a long "a" be pronounced when we have to do with little children. In which case it is easier to practise insufflation during the emission of that vowel, than to catch the moment of deglutition, as children seldom swallow when told to do so.

It is for a similar reason that we renounce the use of another proceeding, which consists of saying "hack" or "huck," as a vowel can be longer sustained, thereby keeping the curtain of the palate raised during a space of time sufficiently long for the operator to choose the moment of acting, whilst the pronunciation of the consonant "k" only lasts an instant, and if that moment be not seized, the operation will be a failure.

It suffices very often with little children to introduce the point of the bag into the entrance of one nostril, to pinch the nose, and to blow strongly, in order to make the air enter into the tympanum; simple pressure is generally efficacious, at that period of life, to remove the impediment in the Eustachian tube.

In very rare cases, also, the operation is more easily performed, even in adults, by making them pronounce some words instead of performing the act of deglutition. The causes of that peculiarity are still unknown to us.

To conclude the narration of this method, we will give a practical advice which long experience has suggested to us. It is often difficult even in adults to practise insufflation just at the moment the Eustachian tube is open during deglutition. We recommend in those cases the inspection of the neck of the patient, and to compress the bag just at the moment when the larynx is seen to make an ascending movement. That is the surest way of succeeding.

In cases in which insufflations of air do not give a satisfactory result, astringent liquids, such as sulphate of zinc (1 to 2 %) and distilled water, should be injected through the catheter.

In the case of very great tumefaction of the tubal mucous membrane the use of a whalebone bougie is often necessary; but the instrument can only be entrusted to very experienced hands, and should never be used without the control of the *otoscope*, or even of the *rhinoscope*, in very difficult cases. To prove that these precautions are not exaggerated, the least imprudence in the management of that instrument can produce false passages in the pharyngeal tissues or in those of the tube, and if the insufflations be then practised, an emphysema will be produced which can invade the pharynx, the curtain of the palate, the uvula, the face and the neck, and even descend to the breast-bone, to the arm, and even to between the shoulders. According to Triquet (*Leçons cliniques sur les maladies de l'oreille*, 1863, p. 150), emphysema can even invade the larynx and suffocate the patient.

b. Treatment of Purulent Otitis of the Middle Ear.—This form of otitis more rarely accompanies the adenoid affection than the

simple catarrh. We treat it in the following manner:—If the membrana tympani resist the pressure of the liquid accumulated in the tympanic cavity, in acute otitis, and if it were impossible to give exit to the pus by removing the obstruction in the Eustachian tube, it would be necessary to perforate, without delay, that membranous partition in order to protect the wall of the tympanic cavity from a pressure which is extremely painful to the patient.

These are the cases in which the operation of perforation of the membrana tympani is especially serviceable. Once the acute stage has passed, and the tympanum remains perforated, whether it has been artificially pierced, or whether the internal pressure has ruptured it, the catheter or Politzer's proceeding may be used, the same as for group *a*. At the same time, the auditory meatus and the tympanum will be acted upon by means of daily injections of tepid water, followed by astringent instillations. Since 1868 we have used pure alcohol with or without a solution of tannin. We use it, at first, with four or five times its volume of water added to it; gradually we increase the concentration, and we arrive with many patients at instilling pure alcohol.¹ In some cases insufflation of powdered alum has been satisfactorily used.

We seize this opportunity of relating two facts, the knowledge of which should be as generally diffused as possible.

1st, A prolonged discharge of the ear arises 99 times out of 100, not from the auditory meatus, but rather from the tympanum, and is naturally complicated with perforation of the membrana tympani.

2d, Contrary to the almost general opinion, recent perforations of the tympanum are cured, so to speak, always under the most simple treatment, provided it to be applied in time; moreover, it is often possible to bring about complete cicatrization even of long-standing perforations, and to stop at the same time the discharge which, nine times out of ten, accompanies these perforations.

CONCLUSION.

If we have dedicated too much attention to this study of adenoid tumours of the naso-pharynx, and if it be published with too many details, it is because that a considerable number of observations gathered by us authorizes us to affirm the frequency of this affection in general. Indeed, many of our *confrères*, to whom we have communicated the result of our studies, have been struck with the pathological *ensemble* that we attribute to the presence of adenoid tumours, and which every one remembers to have frequently met with amongst young patients.

We may then hope that this contribution will not be without profit to those of our *confrères* who are not yet acquainted with the affection treated of here,—an affection fatal in its effects, and which, notwithstanding, can be combated with the best results by a treatment established upon the bases that we have just related.

¹ The alcohol, said to be pure by the chemists, contains from 2 to 5 per cent. of water, but that is of no importance.

ARTICLE IX.—*On the Etiology and History of Leprosy.* By
W. MUNRO, M.D., Manchester, late of London.

(Continued from page 526, vol. xxiv.)

Contagion.—As the whole of the foregoing part of this work has been a series of proofs of the contagiousness of the disease, I have little more to say in this section than to try to meet a number of objections that have been raised against this theory, and quote cases. I must premise, however, that by using the word “contagion” I do not pretend to express any distinct belief as to the probability of the disease being conveyed by simple contact, being more inclined to believe that it is carried by inoculation in most cases, though long-continued contact even of unbroken healthy with diseased skin may be sufficient.¹

Authors opposing the contagious theory more or less may be divided into two classes: the first entirely denying that it is contagious or communicable, as Danielssen and Boeck, Virchow, the Committee of the Royal College of Physicians, Wortabet and Pruner; the others admitting that it may be contagious, but holding that contagion plays a very insignificant part in its propagation, as Planck. Carter, as I have already pointed out, formerly held that it was not contagious, but *perhaps* inoculable,² but now seems more inclined to admit that it is more communicable than he was then led to believe, in so far as it is less hereditary.³

The chief arguments against contagion have been, 1st, That many married couples live together for years, one being diseased, without the other becoming affected;⁴ 2d, Hospital dressers, hospital physicians, and in former times queens, who sometimes washed the sores of lepers,⁵ are said not to be, or have been, attacked. 3d, That even inoculation of the leprous matter has failed to reproduce it,⁶ and that medical men engaged making post-mortems of lepers, and having their hands bathed with the fluids of such bodies, are not infected.⁷ 4th, Many are exposed to contact with those suffering from the disease, while but few are attacked.⁸ 5th, It has never spread in England, or other countries now clear of it from imported cases. We will consider these objections *seriatim*.

In regard to married couples, what I have already stated in regard to the decrease in or loss of procreative power in the males should be kept in mind, as this reduces the risk to a wife from

¹ It may be worth raising the question, whether in hot countries where the pores of the skin are constantly open, there is not more liability to communication by simple contact. Such a series of cases as are mentioned by Lanché (p. 51) of five persons in Surinam, infected one after another, suggest this idea.

² *Op. cit.* (1862), p. 29.

³ Reports, 1876, pp. 20 and 21.

⁴ Coll. Phys. Rep., lxi. Milroy, p. 5. Kaposi (Hebra), p. 185. Wortabet, *op. cit.*, p. 192. (His one quoted case, in which the husband, a Jew leper, had been four years married to his wife, proves nothing, the time being too short.)

⁵ Simpson, *op. cit.*, p. 412.

⁶ Coll. Phys. Rep., pp. 13, 14, and xlv.

⁷ Bakewell, Vacc. Rep.

⁸ Simpson, *op. cit.*, 400, and Virchow, *lib. cit.*, p. 505.

cohabitation to exactly the same as that of any other person continually in contact with a patient. Again, although at no age is there immunity from attacks, yet the tendency to the disease certainly seems to be greatest within the first thirty years, as in 47 cases of Wortabet's,¹ 36 were attacked before thirty years of age, and only 4 after forty. Similar results appear in Daniellssen and Boeck's tables,² which show that in altogether (in Norway and Southern Europe) 272 cases, 134 were attacked before twenty, and 202 before thirty years of age. In 72 cases in St Kitts, I found that in 36 cases of joint evil, the mean age of attack was twenty-four, the earliest six, and the latest fifty. In 36 tuberculated cases the mean age was sixteen years, the earliest three years, and the latest fifty. The numbers attacked at or under the tenth, twentieth, etc., years were as follows:—

	Years 10	Years 20	Years 30	Years 40	Years 50
Tuberculated . . .	7	18	8	1	2
Non-Tuberculated . .	9	15	4	2	6
Totals of both kinds .	16	33	12	3	8
	61			11	

Thus 49 of the 72 cases were attacked between birth and their twentieth year, and 61 before they had completed their thirtieth year, leaving only 11 attacked after that age. I compared those numbers with the numbers of the population under twenty and thirty years, and I found that 48 per cent. of the population were under twenty years, and 68 per cent. under thirty, so that practically one-half of the population (those under twenty years) furnished two-thirds of the cases, and two-thirds of the population (those under thirty years) furnished six-sevenths.

The greatest tendency to the disease appears to exist from the tenth to the twentieth year, which furnished 33 cases, or 47 per cent. of all the cases, from 22 per cent. of the population, while 26 per cent. of the population (the number living under ten years of age) did not furnish half that number, and 20 per cent. (the number living between twenty and thirty) only furnished 12 cases. After the thirtieth year is passed the tendency appears to become almost *nil*, as of the 3 cases in the table, one was attacked at

¹ *Op. cit.*, p. 188.

² *Lib. cit.*, p. 330. Tuberculated cases in Norway, 188, of which 136 were attacked before thirty (and other 32 before forty). Non-tuberculated 65, of whom 53 were attacked before thirty. In South of Europe 19 cases, all tuberculated, 13 being attacked before the thirtieth year. There is some appearance of a tendency to earlier attack in tropical climates.

thirty-one years, and the others at thirty-four and thirty-six years respectively, between which and forty-eight years only *one* was attacked (at forty-four years). There seems about the forty-eighth year to be a slight increase in the tendency, especially to joint evil, as all the 6 cases of that kind, and one of the tuberculated, that appear between the fortieth and fiftieth year, were attacked between the forty-eighth and fiftieth year.

The bearing of this on the escape of women married to lepers is obvious; the earliest age at which any married man was attacked in St Kitts was twenty-eight years; it was sometime thereafter before he became a confirmed leper, and meantime his wife, who was about the same age with himself, was rapidly passing beyond the age of susceptibility. The wives of those attacked later in life would have still less chance of being affected.

Thus, leprosy attacking a male prevents marriage, and when it occurs after marriage, by the time the man is in a state to communicate the disease his wife has from her age become in most cases insusceptible.

In spite of these facts, which tend to keep down the numbers, however, the fact that wives have, in a number of instances, been attacked after husbands, and that where inquiries have not been carried far enough to decide which was attacked first, married couples have been noted as both being lepers, renders the argument against contagion worthless. Tilbury Fox,¹ Planck,² E. Wilson,³ Van Holst⁴ of Dutch Guiana, Manget of Demerara,⁵ and Nicolson of Antigua,⁶ each quote a case of an European infected, by, or at least after, cohabitation with a leper woman. Kaposi⁷ mentions a case of an Italian affected at Cairo, whose wife was attacked two years later. Proto Medico⁸ (Corfu) and Regnaud⁹ (Mauritius) mention three cases of wives affected from husbands. Dr Carney¹⁰ (Guiana) says—"A woman had connexion with an old leprous African; she afterwards became leprous. Carter¹¹ gives similar cases to Regnaud's, and mentions a case of a husband affected after a wife, and two of wives after their husbands. In one of the last cases *her* son was also attacked. Macnamara¹² gives four cases (from the Indian Report on Leprosy) of wives after husbands and one of a husband after a wife. Those so attacked belonged to healthy families. Besides

¹ *Colonial Medical Journal*, March 1866, p. 802.

² *British Medical Journal*, vol. i. 1877, p. 434.

³ Coll. Phys. Rep., p. 431. (This *may* be the same case as Fox mentions.)

⁴ *Ib.*, p. xliv.

⁵ Milroy, Rep., p. 10, and Coll. Phys. Rep., p. 45. Her child by him afterwards became affected.

⁶ Coll. Phys. Rep., p. 20.

⁷ Hebra, vol. iv. p. 184.

⁸ Coll. Phys. Rep., p. 44.

⁹ *Ibid.*, p. 86.

¹⁰ Quoted in *Lancet*, 1867, vol. i. p. 253.

¹¹ *Trans. Med. Soc. of Bombay*, 1862, p. 30.

¹² *Op. cit.*, pp. 22-24.

these, Pruner¹ and Shier² and Brunelli³ (Crete) speak of leprous couples without giving particulars, and Schillingius⁴ distinctly says—"I could point out many examples to the contrary by name both of husbands and wives who have contracted the disease during marriage, did shame permit." In St Kitts, Hannah Carty, æt. twenty-seven years, lived, slept with, and washed the clothes of, T. Wilson, when a young girl, he being covered with sores. She was attacked at seventeen years of age. Her family are all healthy. Whether it is possible for the disease to be transmitted by sexual intercourse without inoculation is still quite undecided. I am inclined to think not. It must be clearly remembered that inoculation may take place during connexion if there is the slightest ulceration of the cervix uteri. Wilson's case I have just quoted, in which syphilis was conveyed at the same time as leprosy, is one of the few cases tending to show that the latter can be conveyed by cohabitation.

In the face of the cases I have quoted I cannot but think that the statement that wives or husbands are never affected from one another, or, at least, after one another, is incorrect, and any argument founded on it falls to the ground.

The second argument, viz., that hospital-dressers, surgeons, and others attending lepers are never attacked, were it even true, is of no value, as the same might be said of such persons in Lock Hospitals, yet no one denies that syphilis is communicable. But the case of, at least, one medical attendant, Dr Robertson of the Ile Curieuse Asylum, Seychelles,⁵ and those of several hospital-dressers, some of whom, at least, were of clean families, are on record. Similar to these, though not occurring in leper asylums, were the cases of Drs Livingstone and Kirk, threatened with the disease after attending a leper,⁶ and such cases as that of a Brahmin servant of healthy family, who was attacked after twelve years' attendance on a leper master,⁷ having had to *wash and dress his sores*. Carter mentions two cases occurring in the children of a sepoy in charge of the Dhurumsala hospital, who with his wife was healthy.⁸

In the case of queens who washed the sores of lepers as an exercise of piety, the contact was too occasional for any conclusion to be drawn from these particular persons not becoming affected afterwards.

The third argument, that even inoculation may be practised in

¹ *Op. cit.*, p. 173. ² Milroy's Rep., p. 5. ³ Coll. Phys. Rep., p. 64.

⁴ *Op. cit.*, xxxvi. p. 34.

⁵ *Lancet*, 23d February 1867 (quoted from The Indian Report).

⁶ Hillebrand in Macnamara. *Op. cit.*, p. 57. Three cases—two in Calcutta, one in Java. Two cases reported as having occurred in the Almorah Asylum (Coll. Phys. Rep., p. 141) are authoritatively contradicted in Lewis and Cunningham's Rep., p. 58. Zambesi, p. 225.

⁷ Coll. Phys. Rep., p. 141.

⁸ The fact that *an ox* in a leper asylum in the Mauritius (Coll. Phys. Rep., p. 88) died of the disease also tends to refute this argument.

some cases with impunity,¹ and that those making post-mortem examinations of lepers, as Dr Bakwall remarks, may have their hands bathed in the secretions without being affected, is worthless, when it is considered, firstly, that in the very few cases in which inoculation was practised the systems of those undergoing the dangerous experiments were not in the least likely to have had any tendency to be affected, they being in good health and well fed; and in regard to post-mortems, the danger of dissection wounds is well known, yet were every student who cuts his finger while dissecting, or has his hands bathed in the undoubtedly poisonous secretions of dead bodies, to die, not one in ten would ever pass through their curriculum alive.² The case of Dr Livingstone, who was attacked *after suffering privation*, having scratches on his hands; one mentioned by Larrey,³ in which the disease *began in the wound on a stump*; and that of Hillebrand,⁴ in which a European child in Borneo was affected after thrusting a thorn into himself after a leper boy had in his presence done so,—all tend to show the erroneousness of such an argument, and that inoculation is the chief, if not the only, manner by which the disease is propagated, such propagation only taking place quickly when some special circumstance, as the person being wounded, makes inoculation easy and certain, while more prolonged intercourse is generally necessary to afford opportunities for inoculation in ordinary circumstances. It is possible at the same time, however, that in tropical climates, where the pores of the skin are constantly open, a kind of inoculation through the skin, so to speak, may by prolonged and repeated applications of the diseased discharges take place, even without any scratch or wound existing on the person of the person so infected.

Fourthly, No doubt, of many exposed to the disease only a certain number take it, but exactly the same may be said of every contagious disease; even the most violently *infectious* diseases, poisoning every fluid surrounding the patient, never attack *all* exposed to their influence — how much less can leprosy, which requires, it appears, either direct inoculation or very prolonged contact, to be repeated constantly, to attack all brought in any way into communication with the diseased person. That it does sometimes, however, attack a number of persons from one source is proved by the series of cases mentioned by Macnamara and Landré, and those already spoken of by myself.

Fifthly, As to its *never* spreading when imported, I have already shown that it is not likely to do so in a well-fed population; but Dr Owen's case of the Irishwoman in Stepney, and Gaskoin's case from Guernsey, which I have already remarked upon, must be

¹ Coll. Phys. Rep., xlv.

² Paget, *Lancet*, 3d June 1871, in a lecture on "Dissection Poisons," points out that immunity may be obtained by custom, just as the system may get accustomed to strong drink or arsenic. The question is worthy of consideration, whether such immunity may not apply to the effects of the inoculation of leprosy matter.

³ *Op. cit.*, p. 225.

⁴ Macnamara, *op. cit.*, p. 57.

accounted for otherwise than by contagion brought from abroad before the assertion can be accepted as correct, or any argument founded on it be accepted as of value.

Finally, Can it be truly said that the instances of supposed contagion are so few and imperfectly related as not to assist in proving that the disease is contagious? ¹ I think not, keeping in mind, as I have already said, the long period of incubation, the ignorance of the greater mass of the populations of the countries where the disease is prevalent, causing great difficulty in tracing long-forgotten or wilfully-hidden chances of receiving the contagion; looking, too, at the extreme difficulty in satisfactorily proving the communicability of some diseases with even a very short incubative stage, I think many of the cases on record are, especially when the proof they afford is taken in conjunction with the history of the disease, quite conclusive as to its contagious nature, it being always to be kept in mind that one *positive* case overweighs fifty negative ones.

Larrey ² gives instances, one of which has been already mentioned, among French soldiers, who, suffering from privation and being *wounded*, were specially liable to inoculation. I have already spoken of wives taking it from husbands, and in treating of heredity given series of cases of my own, with those mentioned by Macnamara and Landré and Max, which could best be explained by the theory of contagion. Max ³ mentions one case of a widow, aged 58 years, with seven children, who went to live with a daughter, a leper, and was attacked five years later when 63 years of age; in another case, ⁴ a slave woman attended *her master's father, a leper*, and was attacked after his death. Besides these already quoted, Landré gives ten cases of contagion among well-to-do Europeans or their children, all of whom are stated anterior to their attack to have continuously or repeatedly to have been in contact with lepers. ⁵ Heredity could have nothing to do with such cases. He also mentions (p. 58) the case of a mulatto woman of clean family, who being in constant contact with two leper relatives of her husband, became affected. Macnamara, ⁶ quotes seventeen cases from the Indian Report. The following remarkable series is among them,—1st, A woman; 2d, In five years, her daughter living with her; 3d, The woman's husband, in four years more; 4th, Her husband's brother's wife *living in the same house*, not a blood relation; 5th and last, in about two years after, the husband's brother. Quoting Dr Rose, he mentions the case of M.

¹ *Vide* Coll. Phys. Rep., p. lxi.

² *Op. cit.*, p. 225.

³ *Gazette Med. de Paris*, 14 Juilliet, 1877, cas. xiii.

⁴ Cas. viii.

⁵ I am astonished at the reckless injustice of Liveing's criticism on these cases (p. 92), viz., that they would show that the disease is "highly infectious," and therefore "prove too much if they prove anything," in the face of Landré's distinct assertion that they were "*continuellement en contact*," and it requires "contact très intime," p. 79. No such conclusion can be drawn from his cases, nor does he desire that it should be

⁶ *Op. cit.*, pp. 21 to 24.

Sneider, who lived with his uncle, M. De Souza, while the latter was a leper, and was attacked with the disease before ulceration and profuse discharge set in in his uncle's case. M. Sneider was Dr Rose's apothecary, and had a hospital orderly under him, who "contracted leprosy from him, and died in less than twelve months from the time the disease first became manifest." All the other cases, which I have no space to quote more fully here, show that prolonged contact with a leper, especially after ulceration has set in, is fraught with danger to the healthy.

Manget¹ mentions a case in a white man, contracted by sleeping with a Maltese leper and smoking the same pipe. Daniellssen and Boeck mention four similar cases in Europe,² and I have already spoken of two I saw in St Kitts, so caused, where there was no relationship between the person affected and the one who took it. Manget also mentions the cases of three black children who were all affected after playing constantly with a coloured child not related to them, who was in their mother's charge. In the College of Physicians' Report, also, there are a number of other cases given besides those already quoted, the details of some of which are no doubt too meagre to afford individually conclusive proof of contagion, as, for instance, that of Dr Duffey's (p. 45), viz., "a healthy girl, æt. 7, slept in the same bed with a boy, æt. 9, who was diseased; she became affected with leprosy." To those holding that heredity is an important factor in the etiology of leprosy this girl *might* have been one of a leprous family, or she *might* have got the disease without sleeping with the boy, but looking on heredity as of no value as a factor, seeing that Europeans sleeping with lepers became affected, thus excluding heredity, I must say that I consider that such cases were too hastily put aside by the framers of the Report, and too lightly valued, when the number of them given is taken into consideration. Taken together with the other proofs I have given in this work, they afford indubitable proof that leprosy is a communicable disease. Dr Pollard³ mentions that the *whole* of the children of a distinguished family in Guiana were attacked after playing with a leprous negro boy. The late F. Wigley, Esq., President of St Kitts, related a case to me of a white gentleman who was attacked after a leprous servant had surreptitiously made use of some of his master's clothes to dances, at which of course he would sweat very much. In regard to the remainder of the case in the College of Physicians' Report, I need only notice them shortly. At p. 202 is a case of a master affected after a servant "who was constantly about his person," similar to the one I have

¹ Milroy's Rep., p. 10; and Coll. Phys. Rep., p. 45.

² *Op. cit.*, p. 440, Case 25; and 481, Case 13 (raised by a leper), Norwegian; and Case 1 at Provence, and Case 7 at Rhodes (p. 520, *et. seq.*) Cases 13 and 7 were the only ones in the family. They all considered that they got the disease by sleeping with lepers.

³ *Lancet*, 23d Feb. 1867.

just related; p. 36, "a young girl" slept with a young woman, seven or eight years later she was a confirmed leper, subsequently her mother took it; p. 32, two cases of young men by proximity, or direct contact (details not given); p. 86, a stepson of healthy family from a leprous stepfather (Regnaud); p. 198, W. E., European boy in Sarawak, after playing constantly four years previously with a Chinese leper boy, all W. E.'s family were healthy; and lastly, at p. 239, a somewhat unsatisfactory case of an English colonel who believed that he got the disease "from sleeping in an unclean bed in a negro's hut." I only mention this case because the circumstances are similar to those mentioned by Larrey in regard to one of his cases in a French officer.

Thus it will be seen cases are not wanting to add to the other proofs that the disease is communicable. I must say, also, that I do not think that the universally received opinion which has obtained for ages¹ in countries where the disease has existed so long, and been held by all medical authorities up to the time of Schillingius and Hillary, such authors being close observers of natural phenomena, though they were not, perhaps, so much given to collecting cases and giving details as those of the present day—I think an opinion so supported should have been treated with more respect, and a contrary one expressed with more caution, than was done in the College of Physicians' Report.

To sum up the whole of the proofs of communicability I have given in this work:—

1. It has always spread from race to race wherever an infected race was brought into contact, under favourable conditions, with a non-infected one.

2. It has been and is most prevalent amongst those races and nations among whom the freest communication with lepers is allowed by public opinion and law.²

3. The so-called proofs of heredity commonly advanced being utterly defective, most, if not all of the cases accepted by some authors as hereditary are best accounted for by communicability.

4. The cases on record of probably communicated leprosy strongly support this view, and, taken with the other proofs, show that the disease is undoubtedly communicable, probably only by long continual contact or inoculation,³ but possibly through drinking water.

¹ See *Wise*, p. 159.

² Daniellssen and Boeck's words in regard to Norway are worthy of quotation on this point:—"A la même époque où la Spedalskhed par les mesures énergiques opposées à sa marche est devenue plus rare dans toute l'Europe, dans notre pays elle n'a pas été combattue avec tant de fermeté que dans les autres pays, et par cette raison elle y apparait encore à une degré inquiétant."

³ The fact lately observed, that mosquitoes can imbibe the *filaria sanguinolenta* with the blood, suggests the possibility of some cases of leprosy being communicated by means of these insects.

ARTICLE X.—*Report of a Case of Puerperal Eclampsia.* By Dr
JOHN OSBERT WILSON, Huntly.

(Read before the Obstetrical Society of Edinburgh, 28th May 1879.)

THINKING that the following case of puerperal eclampsia might be of some interest, I made as complete notes at the time as the exigencies of a country practice allowed. The case may be summarized as one of *puerperal eclampsia with albuminuria—spontaneous and easy labour—recovery.*

The facts of the case merely are recorded, the pathology being avoided as somewhat dangerous ground.

On the morning of Sunday, 18th August 1878, about 8 A.M., we received a note from a farmer living some five miles distant, asking us to see his wife as soon as possible. His note stated that his wife, who was near her confinement, had become suddenly ill early in the morning, had had three or four “epileptic” fits since, and was still in an unconscious state.

Accordingly, after a hurried breakfast, I drove to the patient's house, taking with me an ounce of syrup of chloral hydrate, in addition to the usual obstetric appliances.

On arriving there, I found Mrs M. lying in bed with her eyes shut, and breathing with a peculiar sighing respiration. Her face was somewhat puffy, and of a pallid hue. The lips and cheeks were bluish, though not to any great extent. When spoken to loudly, she replied in monosyllables, and immediately relapsed into her former semi-unconscious state. She put out her tongue when told. It was somewhat furred, but had not been bitten during the fits. The abdomen was distended by the gravid uterus, but there was no evidence of ascites. The pulse was small and weak, beating between 80 and 90 per minute.

On making a vaginal examination, I found the cervix obliterated, the os easily admitting the finger, and a child presenting by the vertex. All was ready for labour, but it had not properly commenced. The rectum was somewhat loaded with fæces. She had made water recently, so I did not introduce a catheter. The urine voided had been thrown away, and I had not then an opportunity of testing for albumen.

As I had other visits to make, and as there had been no return of the fits while I was present, I administered three teaspoonfuls of the syrup of chloral (30 grs. Ch. Hd.), and left orders to give her another teaspoonful every three hours, and more frequently should there be a return of the fits, and went on with my round.

About six o'clock in the evening the husband came up himself to ask me to visit his wife again, as she had had first a slight, and then a severe fit within a short time. I took Mr M. along with me, and got to his house a little after seven o'clock. The patient was in much the same condition as when visited previously. Her

attendants told me she had had a fit shortly after her husband's departure, but none since. She had passed a considerable quantity of smoky-looking urine. Some of this I now examined by heating in an iron spoon. A large coagulum formed. On examining per vaginam, I thought the os was slightly more dilated than in the morning. However, I waited on in hopes that labour would commence soon.

About 9 P.M. the patient had a fit. It began with convulsive movements in the arms and upper part of the body, which soon extended to the legs. Rigidity then predominated, respiration was much impeded, and the lips, etc., became blue. There was also squinting. In a few seconds the respiration became stertorous and the patient comatose for several minutes. She soon, however, returned to her former semi-conscious condition.

I now resolved to remain all night, and soon after went to bed. I was not disturbed till nearly 7 A.M., when I heard that there had been no more fits during the night. Before setting out, I exhibited an enema of soap and water, as the bowels had not been moved, but it failed to bring off anything. The patient was then ordered a compound colocynth pill.

I went home, hearing no more of her till evening. However, I sent her a digitalis mixture in the forenoon. I had brought home a specimen of the urine, and this I now examined more minutely. It was smoky in colour, sp. gr. between 1015–1020, highly albuminous (about $\frac{2}{3}$), and on microscopic examination showed abundant tube casts, hyaline and epithelial.

In the evening the following laxative was ordered:—

R Infusum sennæ co. \mathfrak{z} ij. Sig. Half an ounce to be taken every hour till the bowels are moved.

A little before 1 A.M. of Tuesday the 20th, a messenger came to inform me that Mrs M. was in labour. I immediately set off to assist. About two o'clock when we arrived I found that the child had been born about an hour. It was a female and dead, and had apparently been so for a day or two. The labour had been easy and natural, the placenta had been expelled spontaneously shortly after the child, and there had been no fits. The patient, however, was still very dull and somnolent. I waited for an hour and a half or so, and then went home.

The patient continued to improve uninterruptedly, the urine gradually becoming less albuminous.

On the 5th February 1879, the patient's husband called to tell me that his wife was again pregnant (about three months gone). He brought some urine, which I examined and found free from albumen.

Mrs M. is 30 years of age, and has been married about $2\frac{1}{2}$ years. She miscarried twice—once at six weeks, and once at about four months, but has had no child at term except the one just recorded.

This case, I think, calls for few remarks. It is simply a narra-

tive of what seems to me a good example of a mild case of puerperal eclampsia, terminating favourably under a policy of little more than "masterly inactivity." I do not think that the hydrate of chloral administered (about 80 grains in all) had much influence on the course of events. On the other hand, I believe that the case would have had an equally favourable issue had more energetic measures been employed and the labour terminated early.

ARTICLE XI.—*Cases of Intra-Cranial Tumour.* By BYROM BRAMWELL, M.D., Late Physician and Pathologist to the Newcastle-on-Tyne Infirmary, Late Joint Lecturer on Clinical Medicine and Pathology in the University of Durham College of Medicine, Newcastle-on-Tyne.

(Continued from p. 1078, vol. xxiv.)

IN the following case, which was only under observation for a short time, the symptoms were clearly due to the presence of an intra-cranial tumour. The uncertain, waddling gait seemed to point to its being situated in the cerebellum.

CASE XIV.—*Boy, æt. 5. Headache and Vomiting greatly increased after an injury to the Head. Optic Atrophy. Waddling, unsteady Gait.*

W. R., æt. 5, was admitted on 16th October 1878, suffering from headache and loss of eyesight.

Previous History.—He has been delicate since his birth. Six months ago he began to have occasional attacks of headache and vomiting. In July he was knocked down by a cart and received a severe blow on the forehead. Since this accident he has rapidly got worse, and has lost his eyesight.

Family History.—Several of his relatives are scrofulous.

Present Condition.—He is fairly well nourished. Sight is almost nil; the optic discs are in an advanced stage of atrophy. The headache is paroxysmal and intense, the pain being referred both to the forehead and occiput. The gait is very unsteady and waddling. Even when standing the feet are kept as wide apart as possible. The temperature and pulse are natural. All the other organs are healthy. He remained for some weeks under observation, and was then removed by his friends. No new symptoms developed during his stay in hospital.

I shall now relate a few cases illustrative of some of the difficulties which occur in the diagnosis of intra-cranial tumours. The first is a case of basilar meningitis, causing great distension of the lateral ventricles. The symptoms in the later stages were identical with those of an intra-cranial tumour. The earlier stages were attended with high temperature—a most important symp-

tom in a diagnostic point of view; intra-cranial tumours do not *per se* give rise to any elevation of temperature, and the meningitis, which sometimes complicates an intra-cranial tumour, is seldom sufficiently extensive to be attended with marked pyrexia. This case is also interesting, from the tetanic-like character of the convulsions, and from the fact that the meningitis was almost confined to the posterior basilar region.

CASE XV.—*Girl, æt. 11. Vomiting and Headache occurring suddenly three weeks before admission to Hospital. Tetanic-like Spasms and Convulsions. Rigors. Marked Elevation of Temperature. Subsidence of Active Symptoms. Optic Atrophy. Coma. Death. Autopsy. Great Distension of Lateral Ventricles. Thickening of the Membranes of the Posterior Part of the Base. Caseation of the Mesenteric Glands.*

M. W., æt. 11, was admitted on 17th May 1877, complaining of headache, pain in the back, and shiverings.

Previous History.—Two years ago she fell down a steep hill, and hurt her back severely. Since the accident she has occasionally complained of pain in the lower dorsal region. Her general health has, however, been good until three weeks ago, when she was seized with headache and vomiting. Convulsive twitchings appeared in the muscles of the face. Dr Luke Armstrong, who kindly recommended the case to me, stated that the spasms very closely resembled those of commencing tetanus. Her friends know no cause for the attack. She has had no sore, wound, or injury.

Family History.—All her friends are healthy.

Present Condition.—The facial expression closely resembles the *risus sardonius* of tetanus, the angles of the mouth being drawn downwards and backwards in tonic spasm. The head is retracted, the back slightly arched. Every now and again the arching of the back and retraction of the head become greater. Convulsive twitchings are occasionally seen in the muscles of the face and neck. Rigors frequently occur, during which she complains of feeling cold, her teeth chatter, and she trembles violently.

Her chief complaint is frontal headache. There is, too, some pain and tenderness over the upper part of the spinal column (cervical and dorsal regions). The spine is naturally formed. The application of the hot-sponge test elicits nothing abnormal.

The mental faculties are quite clear; the special senses natural. The pupils are contracted, the optic discs seem a little redder than natural, the vessels large, but there is no œdema.

The tongue is slightly furred; she is very thirsty. The other organs are apparently healthy.

The temperature is stated in the case-book to have been normal on admission; the pulse 120.

Treatment.—Ice-bags were applied to the head, and a mixture containing chloral and bromide of potassium was prescribed.

CHART OF TEMPERATURE AND PULSE IN THE CASE OF A. B.

Note.—After 13th May temperature and pulse were normal.

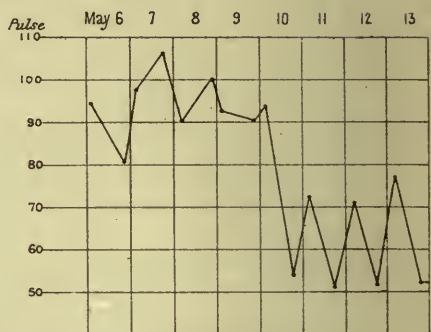
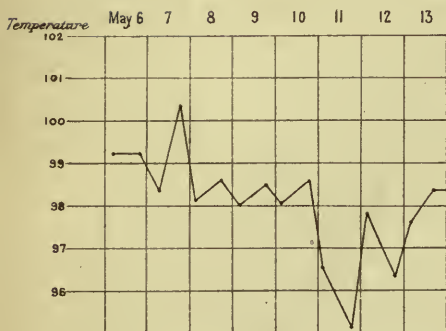
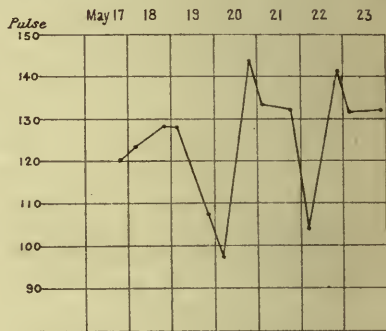
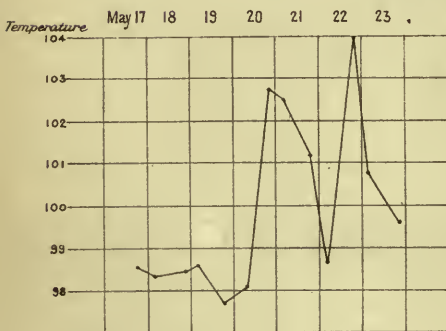


CHART OF TEMPERATURE AND PULSE IN THE CASE OF M. W.

(First week after Admission.)



Note.—From 23d May until 10th June the morning temperature averaged 100° F., the evening temperature 100°·8 F. The highest morning temperature during this period was 103°·4 F., the lowest 97°·8 F; the highest evening temperature 103° F., the lowest 98° F. After 10th June the temperature gradually became normal.

Subsequent Progress of the Case.—For the first three days after admission she continued much *in statu quo*.

On 20th May the evening temperature was 102°·8 F., and on 22d May it rose to 104°·2 F. (see Chart), the pulse being 140. From this date until the next note (19th June) she remained much the same. There were occasional attacks of opisthotonos.

On 19th June she took a convulsion at 2.15 P.M. The spasms were tonic, the back was very much arched, the head and legs approaching. After the attack, which lasted for a short time, she shivered, vomited, and then became delirious. There was now well-marked double optic neuritis.

On 23d June she had another fit, with marked opisthotonos, and on 24th June a third.

On 27th June she had a severe rigor, which was followed by delirium.

On 29th June a fourth fit, with opisthotonos.

After this date there were no more fits. She passed into an apathetic state, complaining every now and again of headache, and having occasional attacks of vomiting. Her sight became dim, and the optic discs became gradually atrophied. The pupils were now widely dilated and very sluggish. The head continued to be retracted; the right arm, too, was flexed and rigid. The urine and fæces were passed involuntarily. She became emaciated to the last degree, bedsores formed, and she died on 8th October, having been completely comatose for several days. For two months before death the temperature and pulse were normal.

The Autopsy was made twenty-four hours after death. There were two small extravasations of blood on the vertex; the scalp was otherwise natural. The skull-cap was thin, but natural. The membranes at the base were thickened and opaque. These appearances were slight in front, but very marked posteriorly, and it was apparently from the pressure of this cicatricial tissue on the veins of Galen that the dropsy of the ventricles had resulted. The lateral ventricles were enormously distended with clear serum. The brain weighed 2 lbs. 7 oz. The brain tissue was soft and œdematous.

There were numerous little opaque spots of a yellowish colour scattered over the membranes at the base. On microscopical examination they were found to consist of degenerated leucocytes and granular debris. No tubercles were found.

The membranes of the upper part of the spinal cord were thickened and opaque, but only to a slight degree.

The brain, spinal cord, and cerebellum were otherwise normal.

The mesenteric glands were enlarged and caseous; some of them quite calcareous.

No tubercular deposits were found in the lungs or intestine.

Remarks.—The temperature and the sudden commencement of the attack were the facts which in this case contra-indicated an

intra-cranial tumour. The temperature, unfortunately, cannot be relied upon in all cases; for cases of meningitis are sometimes met with (cases of chronic meningitis, syphilitic meningitis) in which there is no marked pyrexia, in which there is double optic neuritis. In these cases it is impossible to differentiate between meningitis and tumour. Fortunately for diagnosis, such cases of meningitis are extremely rare, and in any doubtful case the much greater frequency of coarse lesion (tumour) would justify the diagnosis of tumour.

The same remarks apply to those rare cases of chronic cerebritis, a striking example of which has been reported by Dr Hughlings-Jackson, in which double optic neuritis is associated with headache, vomiting, and other symptoms of tumour.

The next case is one of meningitis with double optic neuritis, in which there was at one stage of the case a remarkably low temperature. The case is interesting in this respect, and also from the fact that the patient made a good recovery.

CASE XVI.—Meningitis resulting from Purulent Inflammation of the Temporal Bone. Severe Headache; Vomiting; Double Optic Neuritis with Perfect Vision; Vertigo and Whirling Sensations; Pallor; Rapid Emaciation; Slow Pulse, Low Temperature. Recovery under large doses of Iodide of Potassium.

A. B., æt. 26, a pitman, married, was admitted to the Newcastle-on-Tyne Infirmary, under my care, on 29th April 1875, complaining of severe headache, giddiness, and loss of flesh.

Previous History.—He has been through life a strong healthy man. His present illness commenced suddenly, and without obvious cause, eight weeks ago. One night after work he felt a severe pain in the right side of the head, and in the right ear. The next morning he was so giddy that he could not get out of bed. He has been laid up since. He has had several attacks of vomiting. He has lost a great deal of flesh (three stones). A week after the attack commenced a discharge of matter took place from the ear; the headache has been much easier since. He has not had any head injury. Has not had syphilis.

Family History.—His mother died of phthisis. His brothers and sisters (four in all) are dead, but he does not know what they died of.

Condition on Admission.—He is very pale and anæmic. His expression is bright and cheerful. He says he has lost three stones in weight, but does not look much emaciated. He is very giddy, especially on stooping. When lying in bed the room seems to whirl round him. He complains of pain in the right ear, and all over the head. It is sometimes so severe that he thinks his head will burst. The external auditory canal is swollen and painful, but there is no discharge. Hearing is impaired on the right side.

The pupils are moderately dilated; vision is perfect, but there is well-marked double optic neuritis.

There is no paralysis, and no affections of sensibility. He walks with an uncertain gait, as if he were three-parts drunk.

The tongue is quite clean; the appetite poor. The *temperature* is normal, the *pulse* varies greatly; when at rest it is of normal frequency, but the slightest exertion makes it jump up 20, 30, or even 40 beats per minute.

He has had several rigors.

Treatment.—Ice-bags were applied to the head, the ear was well syringed out with warm water, and a brisk purgative was administered.

Progress of the Case.—On 4th May the pain in the head was severe, and he vomited.

On 6th May he was no better; half a drachm of the iodide of potassium, thrice daily, was ordered.

On 10th May it was noted—He looks and feels better.

12th May.—There has been a remarkable fall in pulse and temperature. (See Chart.)

14th May.—Relapse of the headache; the eyesight is now a little dim; there is more swelling of the optic discs.

23d May.—Very much better; headache gone.

20th June.—Says he feels quite well, and wants to go home. Was accordingly discharged.

21st June.—His wife came to-day to say he is so much better that he has determined to commence work. He was advised to keep quiet, and to continue the iodide.

24th July.—He came to see me to-day. He says he feels quite well, and is very anxious to get to work. His sight is a little dim.

28th September.—His wife came to tell me that he was perfectly well, and had been at regular work for five weeks.

(To be continued.)

ARTICLE XII.—*The Bearings of the shape of the Fœtal Head on the Mechanism of Labour.* By DAVID BERRY HART, M.B., M.R.C.P.E., Assistant to the Professor of Midwifery in the University of Edinburgh, etc.

(Read before the Obstetrical Society of Edinburgh, 25th June 1879.)

IN the Mechanism of Labour we have to consider the three factors of the Powers, the Passages, and the Passenger or fœtal head. Each of these has its own independent part to play; but the Passages and Passenger have, in addition, a mutual influence, modifying and being modified by one another. Thus the elastic lining of the pelvis is moulded over the bony pelvis by the

advancing head; which, in its turn, is moulded or even distorted by the bony or elastic canals, so as to give an imperfect cast of the pelvic brim in some special cases, and a fair idea of much of the special mechanism it has gone through in most. The bearing of the shape of the head on the mechanism of labour has not as yet attracted the attention of systematic writers, although the observations of Sir James Simpson,¹ Lahs,² and Dr A. R. Simpson,³ have brought out some interesting facts in regard to this question.

In considering the whole question to-night, we purpose taking up—(1.) The consideration of the special shape of the head; (2.) The mechanical value of the special shape; and, (3.) The bearings of this shape on the mechanism of labour.

The foetal head is a symmetrical wedge when viewed in vertical section, at right angles to its long axis—the broad end of the wedge being above (Fig. 1). It is also a wedge when viewed from the top, owing to its bitemporal being narrower than its biparietal diameter (Fig. 2). These facts, and their practical bearings in turning, have been pointed out by Sir James Simpson in his wonderful monograph on “Turning as an alternative for Craniotomy, and the Long Forceps in deformity of the brim of the pelvis.”⁴ But further, if the head be regarded from the side, it will be seen that it forms a wedge with a steep side,—the occipital end,—and one sloping much more gently towards the forehead. We have thus an asymmetrical wedge formed as shown in Fig. 5.

A similar wedge is formed by the occiput and side of the head (Fig. 2), and by the chin and side of the face. The same asymmetry holds good in oblique directions.⁵ We have now to consider what are the mechanical properties of a wedge with the asymmetry already mentioned. This can be illustrated on the model I now show. It consists of two upright blocks, each with a projecting knee at its upper and anterior angle. Each block is mounted on a frame, and runs easily on wheels.

If now we place the blocks with the projecting knees a little apart, and separate them by a symmetrical wedge, which descends by its own gravity, it will be found that the wedge, which at first had its base parallel to the plane of the horizon, descends without altering this relation, *i.e.*, while descending, and when its descent is finished, its base is parallel to the horizon. If, however, we place the blocks as before, and separate them by an asymmetrical wedge,⁶ it will be seen that this wedge, although placed at first with its base parallel to the horizon, descends with the base,

¹ *Selected Obstetrical Works*, pp. 400, 401.

² *Ed. Med. Journal*, April 1879.

³ A. R. Simpson, *loc. cit.*

⁴ *Die Theorie der Geburt.*

⁵ *Op. cit.*

⁶ This wedge has its one side meeting a perpendicular on the base at an angle of 10°, the other at an angle of 35°. These are the measurements which Dr A. R. Simpson found the heads to have in Tab. C. of Braune's *Die Lage des Fetus*, etc.

making an acute angle with it. It always descends in one way, *i.e.*, the edge of the base subtended by the less steep side descends first.

This property can now be proved in another and more general way.

In the child's head let us only consider the movement of one line, for the movements of one line must be sufficient, since we do not take distortion into account, to explain the movements of the entire head. Let us take that drawn at any instant through the head from one edge of the *orific. uteri ext.* to the other.

The form of the child's head below this line impresses a particular form upon the part of the maternal passage through which it is passing, which is favoured normally by the anatomical arrangements. This form may for any particular instant be taken as fixed, and may be represented by the lines C D, E F. (Fig. 3.)

The line A B is then pushed down the wedge-shaped tube C D E F by a uniform pressure acting at right angles to the line A B. It will progress by (a) a movement of translation downwards, and (b) by a motion of rotation which is determined by the following construction. From A and B draw A O and B O at right angles to the lines C D and E F. The point O of intersection of these lines is the point round which the rotation will take place.

It may take place in such a sense as to raise and depress B, or *vice versa*. If the force applied be uniform, there will be more of it applied between O and B than between O and A, and it will, in addition, be in possession of the longer arm of the lever, so that B will be depressed; if the power be applied between O and B (occipital condyles), B will also be depressed. In any case, then, under the conditions specified, B will be depressed, and A will be under the action of two forces—that producing downward translation of the whole head, and that producing upward movement of A. On the whole, it also moves downwards, but less than B.

If friction can be taken into account, its effects will tend in the same direction.¹

Professor Simpson has already brought before you the value of this shape of the head in flexion, so that I need not take up its application on this point.

I wish specially to consider how Lahs applies it in rotation, in persistent occipito-posteriors, in the mechanism of ricketty pelvis, in face cases, and to point out its further bearing on Synclitism and some other points.

In an ordinary head case—left occipito-anterior—the head descends flexed till it reaches the floor of the pelvis. The approximation of the lateral pelvic walls, and the trending forward of the pelvic floor prevent further vertical descent. Now

¹ For this I am indebted to my friend Mr A. Daniell, M.A., B.Sc., Lecturer on Medical Physics in the Minto House School of Medicine.

the front wall of the pelvis has very little tissue, and that without any elasticity, covering it; and further, it slopes to the front, and has the triangular deficiency of the pubic arch. We therefore have no resistance tending to drive backwards on the front wall of the pelvis.

The posterior wall is clothed with elastic tissue of tolerable thickness, most marked at the oblique diameters. The part of the pelvic floor behind the anterior vaginal wall, strongly dove-tailed into the sacrum, is of very great strength and elasticity. Thus the lower part of the back wall of the pelvis trends forwards, is of a strong elastic nature, and tends, when driven back, to recoil forcibly forwards. The conditions of the non-rotated foetal head are accordingly now as follows:—It lies on the pelvic floor, with its sagittal suture in an oblique diameter, forming, when looked at through the pelvic brim, an asymmetrical wedge (Fig. 4), the steeper side being at the occiput. Posteriorly it is compressed by the elastic lining there. Now, transversely the head is broader at its occipital end than in front of this. Thus the posterior elastic tissue will recoil more on the occipital end of the head simply because it is compressed more. Accordingly, after a uterine pain has driven the head down on the pelvic floor, and driven the latter somewhat back on its sacral attachment as a centre, recoil forwards when the pain ceases, strongest, for reasons given above, on the occipital end of the head, will take place. The shape of the head will now come into play as follows:—Fig. 4 shows the head, non-rotated, looked at from above. The two lines *ea*, *fb*, represent the direction of the driving-forward force of the posterior elastic lining. With these, the tangents at the occipital end of the head, of which *ad* is one, drawn where the head is in contact with the pelvis, collectively make a smaller sum than that of the tangents, of which *bc* is one, similarly drawn at the side of the head.¹ Thus, from the increased resistance behind, the decreased resistance in front, and the special shape of the head,² rotation forwards of the occiput takes place.

All accoucheurs recognise the practical importance of the rotation of the chin to the front in face cases. A glance at Fig. 4 will show you the important part the special shape of the face plays in this movement. Then in those occipito-posterior positions, where the occiput rotates to the hollow of the sacrum, the head is born so.³ The occiput passes over the perineum, and then forehead, face, and chin come under the pubic arch. Lahs's theory explains clearly why this should happen.

In the ricketty pelvis the head most often presents with the sagittal suture close to the promontory, and the head transverse, as it is in this oblique position of the head that it is in stable equilibrium.

¹ This is obviously another way of saying that the head, viewed from this aspect, is an asymmetrical wedge.

² The shape holds good for shoulders and breech also.

³ Some text-books figure it ending as a face case. This is quite erroneous.



FIG. 1.—The fetal head in section, showing its wedge-shape. (J. Y. Simpson.) *b*. Base of skull.

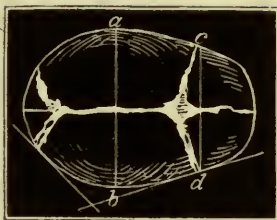


FIG. 2.—The fetal head viewed from above. *a b*, biparietal diameter; *c d*, bitemporal. The side lines show the asymmetry of the head there.

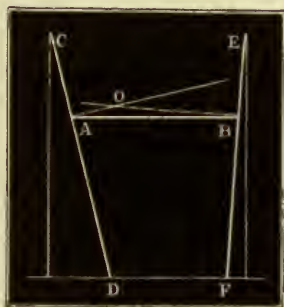


FIG. 3.

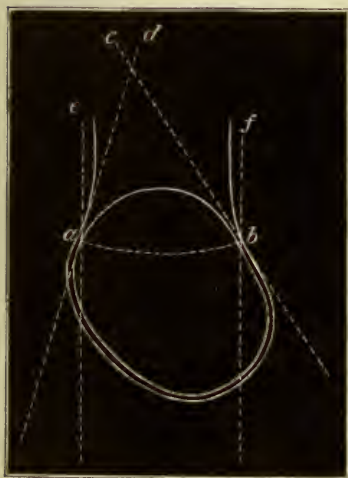


FIG. 4.—The non-rotated head or face viewed through the pelvic brim. (Lahs)



FIG. 5.—Head after a labour where flexion has been marked. The lines drawn show the asymmetry of the head increased. (Olshausen.)

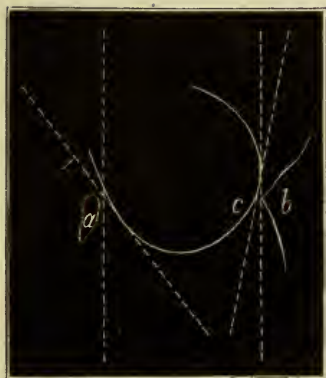


FIG. 6.—Head at brim of rickety pelvis. *a*, Symphysis pubis; *b*, promontory of sacrum; *c*, sagittal suture. (Lahs.)



FIG. 7.—Head showing its natural asymmetry abolished. (Olshansen.)



FIG. 8.—Moulded head in a forehead presentation. The lines drawn show the symmetry. (Olshansen.)

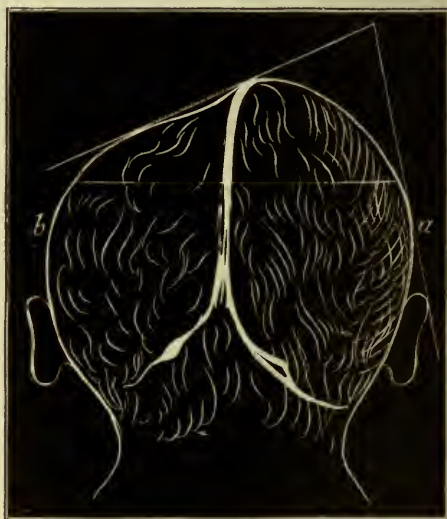


FIG. 9.—Head showing some of the moulding. *b* is side which lay posteriorly in the pelvis; *a*, is side which lay anteriorly. (Fankhauser.)

In the further movements of the head, rounding of the promontory by the parietal bone primarily above the brim, dipping of the forehead, and shoving of the occiput first to the occipital, and then to the forehead side of the pelvis, are the primary points.¹ As Fig. 6 shows, the primary presentation is that of an asymmetrical wedge with the less steep side at the promontory. This then is the reason why the head rounds the promontory. Further, the dipping of the forehead and shoving of the occiput to the side brings in the narrower diameter, so that the teleology of the shape of the foetal head is well seen when we regard it passing through a ricketty brim.

The mutual pressure influence of the elastic lining of the pelvis and foetal head leads to quite definite changes in the shape of the latter. From a consideration of these changes the mechanism of the labour may be fairly made out. Fankhauser, Dohrn, Olshausen, Duncan, and others, have more especially worked out these points, so far as the diagnosis is concerned. These changes in the shape of the head, viewed from Lalis's point of view, throw some further light on the mechanism of labour.

Figure 5 shows a head after birth where the occiput has been deep, *e.g.*, where marked flexion has occurred. (Hinterhauptstellung.) It will be seen that the asymmetry of the wedge has been exaggerated, and the descent thus increased owing to the extra steepness of the occipital end of the wedge.

Figure 7 shows a head where marked flexion has not occurred, and where, accordingly, the anterior fontanelle has been easily felt when the head was in the pelvic cavity. (Vorderescheitellage.)

These are the cases where the accoucheur has to put on the forceps for persistent occipito-posterior, or where the occiput rotates into the sacrum. When the originally placed occipito-posterior head descended, the increased pelvic resistance behind counteracted or even overcame the natural tendency of the occiput to descend and the head to flex markedly. The head so jammed between the conveying lateral pelvic walls rotates only very little, and becoming transverse, is compressed in its long antero-posterior diameter. This compression obliterates the original asymmetrical wedge-shape of the head, so that both occiput and sinciput are, at their girdle of contact, equally steep, and thus the result of the pelvic pressure is to produce a form of head such that neither end of the head in its long diameter has an advantage over the other so far as descent is concerned.

Those curious and rare cases where the forehead presents at the brim and remains throughout the presenting part, can partly be accounted for as I have above indicated.

Figure 8 shows the shape of the head when born. It will be seen that it forms an almost symmetrical wedge, and therefore forehead and parietal side equally descend, until the former presents at

¹ See an able paper on Labour in Narrow Pelves, by Goodell, *Transactions of the International Medical Congress*, Philadelphia, 1876. P. 777.

the vulva. Those forehead cases where the pelvic resistance and caput succedaneum tend to mould the head symmetrically will remain forehead presentations. Increased steepness on the forehead side will form one factor in converting it into a face-case.

One of the disputed theoretical points in the mechanism of labour is the question of Synclitism. I do not purpose discussing this point in general. Matthews Duncan has already clearly demonstrated that Kueneker's description of a synclitic head is not that of a head so placed; and further, he has pointed out that the flattening of the posterior side of the foetal head, indicating distinctly the increased resistance of the posterior pelvic wall, "disprove the existence of the synclitic movement, and help to explain why it does not take place."¹

A consideration of the shape of the foetal head when not rotated will show that anteriorly we have a steep side, posteriorly a sloping one. The anterior side will thus tend to slip down faster than the posterior—a movement the reverse of what should take place to give Synclitism. The same holds good for the head when rotated. (Fig. 9.)

Thus clinical observation, so far as it goes, and our knowledge of the construction of the pelvis and head, are all against there being Synclitism below the upper strait of the pelvis.

From what we have said it will be seen that the shape of the foetal head, face, and breech, is to a certain extent a preparation for the emergencies of birth. In a normal head case in a normal pelvis, flexion and rotation are favoured by it. Should the pelvis be ricketty, the head, either first or last, still has the shape which favours its passage through the contracted conjugate; and even for the minor deviations of face cases and badly-rotated occipito-posterior cases, we have the shape of the face and head markedly fitted for the best means of delivery.

To this we would finally add, that during labour, modifications in the shape of the head may favour or arrest its progress, and, in some rare cases, form a factor in causing peculiar mechanism.

Future observations are still needed as to the shape of the head after labour, as bearing on any peculiarity of its mechanism, and I hope that this communication will direct the attention of obstetricians to an interesting field.

¹ *Synclitic Motion of Foetal Head: Mech. of Natural and Morbid Parturition.* 1875.

Part Second.

REVIEWS.

Die Hautkrankheiten : für Aerzte und Studirende dargestellt. Von Dr GUSTAV BEHREND, Pract. Ärzte in Berlin. Braunschweig : Friedrich Wreden : 1879.

The Diseases of the Skin : for Practitioners and Students. Compiled by Dr GUSTAV BEHREND, Physician, Berlin. Brunswick : Frederick Wreden : 1879.

THE energy of busy workers has narrowed the field of original research in all departments of medicine, and while brilliant discoveries continue to be made, such are chiefly accomplished by those who concentrate their efforts in one direction. Hebra, after silently observing for many years, at length produced a work of immense research, and of inestimable value in dermatology, both clinically and pathologically. Neumann and Kaposi, by removing portions of diseased skin from the living patient, were enabled to add vastly to our knowledge of the histology of cutaneous diseases. Indeed, the value of this mode of examination, painless when the ether spray is used, and harmless to the patient, is hardly yet recognised, though likely in the future to throw more light on the true nature of many morbid processes than any other. Hebra and Neumann were fortunate in being almost the first labourers in a virgin soil, and their reward was a plentiful one; but many others have now been following in their track, each adding his mite to the sum total of knowledge. Some one, however, is needed from time to time to gather up these scattered fragments into one, and to place them in a digested form before those who have not the leisure nor the opportunity for collecting them themselves. Such an one, though he must know his subject thoroughly, need not be an original investigator himself, but to do it properly special talents for selection and combination are required.

The work of Dr Behrend is of this kind. It is in no sense a record of personal investigations; it is an attempt, and a very fair attempt, to place in the hands of the German student and physician a concise account of skin diseases, regarded purely or almost purely from the German standpoint. And here we have our main complaint to make of Dr Behrend—he ignores all recent additions to cutaneous medicine made either in Great Britain or America. Is it well that German students should, by implication, be led to believe that it is in Germany, or in German-speaking countries alone, that any knowledge of skin diseases is to be found, or that any treatment other than that advocated by Hebra

is of use? Willan and Bateman may have been in error in the plan of classification they adopted, and may have led astray by directing too much attention to the mere form of the lesion, irrespective of the tissue involved; but since their day many important advances have been made, both in this country and on the other side of the Atlantic, which were certainly well worth some reference in a handbook professing to be brought up to the present time. Having said this much, we are pleased to see that there does exist in Germany a capacity for condensation; many German handbooks correspond to our encyclopedias, and are full and exhaustive, if not even exhausting treatises on the subjects they embrace. But we have here a neat volume on skin diseases of about the size of one of Churchill's or Renshaw's manuals. On reading it over, though we are satisfied with the correctness with which the various diseases are described, we have met with little, to any one at least who is familiar with the works of Hebra and Neumann, which is new either as regards the symptoms or treatment. Indeed, we see little of Dr Behrend at all; he is altogether behind the scenes, and possesses so little egotism that, while stating the opinions of others, he seldom commits himself to offer his own, or to state the results of personal experience.

Under the head of the physiology of the skin a good account is given of the mode of heat regulation, worthy, we think, of translation. "The variations of external temperature render requisite certain corrections in the bodies of warm-blooded animals, in order to maintain an equality of bodily heat, and to impart a degree of independence of the temperature of surrounding media, such as the air. Two important factors demand notice in connexion with this, one, the secretion of sweat, but especially the rich supply of muscular elements in the skin. The relaxation of the muscular fibres of the skin, which occurs simultaneously with that of the muscular coat of the vessels when the external temperature rises, has, as its result, an increased determination of blood to the surface of the body, and by the addition to the quantity of blood circulating at the same time through the exposed parts, the possibility is afforded of greater heat exhalation by conduction and radiation. With the increased afflux of blood to the skin a rise in the secretion of sweat takes place, which by its evaporation withdraws no inconsiderable quantity of heat from the body. The contrary is the result of a fall in external temperature. Here not only do the muscles of the bloodvessels contract and diminish the volume of blood by a narrowing of their lumen, but the rich system of smooth muscles which ramify in the skin contracts also, the horizontally disposed bundles bring the elements of the cutis closer, in such a way as to narrow the papillæ, while the vertical and oblique ones approximate the surfaces of the cutis vera. In all directions there arises a compression, a condensation of the component parts of the cutis, as well in the perpendicular as in the

horizontal. As regards the capillaries the same effect results as is occasioned in the larger vessels, provided with a muscular coat through its contraction; their contents are diminished; the capillaries will be pressed together, their contained blood proportionally forced out, and with it the escape of heat into the surrounding medium lessened."

Cutis anserina is held to be purely physiological, and not a manifestation of diseased action. Not only is it induced by direct irritants, such as cold and the electric current, but also reflexly, and through the influence of such causes as fright or mental emotion. This is especially noteworthy in hysterical persons, and a case is cited where a lady of this class exhibited this phenomenon under the slightest psychical excitement, "as even when kissed by her lover." This latter mode of origin of gooseskin has, according to Dr Behrend, important relations to forensic medicine. While met with pretty constantly in drowned persons, it is found with far greater frequency in suicides of every form, though absent in those who have been murdered. This affords a point of distinction, when it is in question whether a given case is one of murder or suicide. We seem here to have an instance of Bacon's *idola specus*, an error arising from theoretical as compared with clinical study. The distinction may be of interest pathologically, but is rather too fine a one for actual practice.

Dr Behrend gives a remarkably good account of venereal warts, and notices the variety first described by Hauck, called subcutaneous or endofollicular wart. These form within the sebaceous gland, obstructing its opening, and hindering the discharge of its secretion. There arises in consequence a whitish-yellow prominence of the size of a barleycorn, from which, when squeezed, there escapes first a little plug of sebum, and then follows the small wartlike growth. Kaposi regards these formations as identical in nature with so-called molluscum contagiosum, and as only differing in form; he proposes the name of *Molluscum verrucosum* for them. In treating venereal warts Behrend rightly observes that it is not sufficient to remove them by the knife or scissors; to check their tendency to regeneration the base so exposed must be touched with nitrate of silver or liq. ferri perchloridi. He also expresses himself favourably of savine, used as an ointment, composed of three parts of powdered savine to twenty of glycerine of starch. This is to be thickly applied night and morning by means of a brush. But while dealing with the local treatment of these warts, our author entirely omits to notice the most important part of all, viz., the curative treatment by astringent injections of the irritating discharge, which, in the female at least, both causes and maintains them. Without attention to this all mere local medication affords but temporary relief. And to neglect of this is due a circumstance noted by him, that warts which had existed during pregnancy are apt to recur after parturition.

The chapter on Vascular nævi is carefully written, and three varieties are discriminated. *Nævi vasculares*, or congenital, and *Angioma simplex* and *cavernosum*, both acquired after birth. Speaking of *Angioma simplex*, Dr Behrend remarks, that while the port-wine mark is often developed during the first year of life, or else making its appearance at puberty, it is frequently first observed in older individuals, especially such as indulge in spirituous liquors. "At least I have not seldom had occasion to notice numerous marks (Flecke), varying in size from a barleycorn to a lintseed scattered over the bodies of such persons." Though all the ordinary modes of treatment of these marks are mentioned, evidently with some doubt of their utility, we miss Mr B. Squire's ingenious adaptation of Volkmann's plan of multiple scarification by means of sharp needles. There is reason to believe that this repeated sufficiently often, with, in some cases, the simultaneous or subsequent use of some of the milder caustics, promises best as a mitigation of a distressing disfigurement.

About the longest section in the volume is devoted to Lupus, and this is not surprising, when we consider that nearly every advance both in the elucidation of its true nature and rational treatment has come from Germany and Austria. The section on lupus vulgaris is complete, but that on lupus erythematosus is one of the best we have met with. Behrend freely admits what Neumann first clinically demonstrated, that there is no necessary connexion between disorder of the sebaceous glands and lupus erythematosus, and suggests that the seborrhœa accompanying it is due to continued irritation near the glandular capillary system, leading in time to the peculiar characters of the lesion. His views, in fact, closely correspond with those expressed in an admirable lecture on lupus erythematosus by Mr J. Hutchinson in the *Medical Times and Gazette* of 28th December 1878.

An equally excellent description of cancer is given; the opposing views of Virchow and Remak as to its origin and nature are clearly stated. The starting-point of all cancers in the epithelial elements of the tissues is strongly insisted on, and a good explanation afforded why it originates, for which, as it is too long to quote, we must refer our readers to the work itself. Since there is no originality in this work to induce medical men to consult it, it is unlikely to obtain many purchasers in this country; but we can commend the diligence with which Dr Behrend has collected the labours of his fellow-countrymen.

London Hospital Reports: Medical, Surgical, and Skin Departments. 1877.

THIS volume, which has only recently appeared, contains a great amount of valuable information in a carefully tabulated form, the

rather dry statistical details being varied by brief abstracts of cases which often illustrate questions of present interest. We note that 55 cases of enteric fever were treated during the year, of which 9 proved fatal, or 16·36 per cent., which seems a high rate. More than half the total number of cases occurred in October and November. The characteristic eruption was present in 70·9 per cent. The average duration of illness in cases which recovered and did not relapse was 27·14 days. The longest analysis is devoted to acute and sub-acute rheumatism, with special relation to treatment by salicin. There were in all 199 cases; four proved fatal. Nothing having any bearing on the causation of the disease can be deduced from the occupations of the patients. In general, without stating figures, the statistics seem to prove distinctly that, as compared with other modes of treatment, as by alkalies or quinine, the administration of salicin materially shortens the course of acute or sub-acute rheumatism; that it rapidly lowers the temperature and relieves pain, but that it does not prevent the occurrence of relapse, nor to any great extent lessen the tendency to the development of cardiac complications. There are no tables by means of which any comparison can be instituted between salicin and salicylic acid or its salts, as respects their relative influence on the disease. Four cases of hydrophobia were admitted. All were males, and proved fatal. The periods of incubation were respectively seven, five, four, and two months. The average duration of symptoms from the outset till death was 5·25 days. Eight examples of ichthyosis in various degrees of intensity were met with; and it is noticeable that while no hereditary influence was traceable, in one-half more than one of the family suffered. The entire volume bears evidence of care and attention in its compilation.

The Pharmacopœia of the British Hospital for Diseases of the Skin. Edited by B. SQUIRE, M.B. Lond. J. & A. Churchill: London, 1879.

IN this little volume Mr Squire has collected a number of useful formulæ applicable to many varieties of skin diseases. The total quantity of each prescription is in most cases an ounce, thus it can be more easily remembered. Throughout there are numerous practical hints as to the modes of employing, and the diseases best suited for, the remedies; and the work is one which every practitioner will find handy. While some new preparations are included, such as the ethylate of soda, we miss some of the older and well-tried, such as the iodide and hypochloride of sulphur, the sulphite and hyposulphite of soda, and the valuable solutio vlemingx. These may not be in use at the British Hospital for Diseases of the Skin, but are none the less worthy of a place in any collection of cutaneous formulæ.

Atlas of Skin Diseases. By LOUIS A. DUHRING, M.D., Professor of Skin Diseases in the Hospital of the University of Pennsylvania, etc. Part V. Philadelphia, 1879. J. B. Lippincott & Co.

THREE common and one rather rare disease are represented in this fasciculus, and it is not too much to say that the high standard of the previous ones is even more than maintained in the part which has just appeared. The first plate is devoted to scabies, and affords an excellent idea of the lesions met with in a case of moderate severity. An attempt has been made to figure the acarian furrows, but they come out too distinctly, and have rather too punctate an appearance. Herpes zoster and vesicular eczema are reproduced in a manner which leaves little to be desired; but the gem of the series is the illustration of tinea sycosis. This is not only most true to nature, but is an exquisite work of art. By comparing it with the drawing of non-parasitic sycosis in the second part of the Atlas, a clear conception can be formed of the marked distinction which exists between the perifolliculitis ordinarily known as sycosis and ringworm of the beard as here shown—diseases often confused in practice. The accompanying letterpress is written in Dr Duhring's clear and easy style, and not only explains the plates, but gives a good description of the general features and treatment of the affections under consideration.

Transactions of the American Dermatological Association. New York: D. Appleton & Co.: 1879.

NOTHING stimulates all scientific work more than a spirit of healthy discussion, and this record of the second meeting of the American Dermatological Association shows how much may be done, and how much remains to be accomplished, in the domain of cutaneous medicine. Nowhere is so much interest taken in skin diseases at present than in America. Here, indeed, the importance of this common and hitherto rather neglected branch is gradually becoming recognised, and at the coming meeting of the British Medical Association at Cork, there is to be for the first time a sub-section of dermatology. Besides the abstract of numerous discussions on various important papers, the Transactions contain a report on leprosy in America. This goes to support in some degree the contagiousness of leprosy, several instances being related which seem inexplicable, except we admit this mode of origin. In one case it seems clear that the medium of transmission was the discharge from the sores. We anticipate much advantage from the annual meetings of this association.

Aids to Surgery. Part I. A. to H. By GEORGE BROWN,
M.R.C.S., etc. London: Baillière, Tindall, & Cox.

THIS little book, the first of a series, contains a considerable amount of information in small compass. It is intended for students. The author repels the idea of its being a "cram," but in so doing forgets the French proverb. The statements are carefully worded and do not commit the writer to any doubtful doctrines or theories; but as a natural result of this a vast amount of important and necessary information is omitted. The book might act as a refresher to the memory of a student well grounded in his subject, but to such a one we should consider the process unnecessary.

Fractures of the Lower End of the Radius, etc. By ALEX. GORDON, M.D., Professor of Surgery, Queen's College, Belfast.

THIS book is a collection of papers on fractures of the radius and clavicle and dislocation of the shoulder. The papers are interesting, more especially that on the radius, for in this subject Dr Gordon has constituted himself somewhat of an authority.

We would have liked to have seen some more consideration for contemporary authors and less tendency to glorify himself on the part of Dr Gordon. But there is no doubt that he manages to point out some old-fashioned mistakes which are allowed to remain in standard works in regard to the injuries of which he treats. At the same time, there are some things of which Dr Gordon speaks as if they were quite new and the product of his own genius, but which have been taught in this school at any rate for years.

In regard to the fractures of the radius, the main object of Dr Gordon's paper seems to be the description of his special splint, with the more recent addition and improvement of the curved ulnar or dorsal portion.

In the paper on fracture of the clavicle a new apparatus is described, which, however, unfortunately, the author says is not yet perfected. Dr Gordon argues that the weight of the arm has nothing to do with the displacement of the outer fragment when the clavicle is fractured in the middle. We would direct Dr Gordon's attention to a statement in his own book. He describes (and correctly) how placing the patient in a recumbent position removes deformity, even where his apparatus has failed. We would ask him how this acts unless by removing the weight of the arm, and permitting the shoulder to fall backwards.

Dr Gordon's clavicular apparatus consists essentially in the provision of an artificial clavicle. There is a thoracic portion, an

arm-splint, and a rod or crutch between. The apparatus is intended to carry the shoulder outwards and backwards. In his paper on dislocation of the shoulder Dr Gordon advocates the method of reduction by manipulation, and not by extension and counter-extension.

In the published proceedings of the *Medical Society of the County of Kings, U.S.A.*, we noticed a remarkable paper by Dr L. S. Pilcher on fractures near the wrist-joint, in which the writer advocates a method of treating these fractures without splints of any kind. He says, "The snug application of a strip of strong adhesive plaster, two inches wide, so as to grasp firmly the lower extremities of both radius and ulna, will restrict effusion, reinforce the radio-ulnar ligaments, and render more tolerable efforts at motion of the wrist-joint. . . . Motion, early, regular, and decided in character, is of great importance. Use of the hand should be encouraged after the third day."

Dr Pilcher claims to have treated forty-nine cases of Colles' fracture successfully by the above method. He founds his treatment on a discovery which he made on dissecting a case, where he found the periosteum entire on the dorsum of the radius, and acting as a ligament in connexion with the extensor tendons and their sheaths. When the fragments are placed in their proper position, "the untorn dorsal periosteum prevents any forward displacement. . . . Upon the outside the adhesive strap, firmly applied, prevents displacement in that direction."

Dr Pilcher has been at great pains to prove his point, and brings forward a large number of experiments and dissections which he has made. For all that we are hardly prepared to recommend his plan of treatment for general adoption.

We found the paper interesting and well worth the reading.

Report of Medical and Surgical Work during the year 1878, in connexion with the Medical Mission at Nūgata, Japan. By THEOBALD A. PALM, M.D.

OUR space will not admit of any lengthened or minute account of this Report, which we have read with interest. Suffice it to say, that, although the mission has existed only about three years, 5172 cases have been under treatment during 1878, and that 174 operations—some of them of a serious nature, and taxing the skill and courage of the surgeon—have been performed, with at least an average amount of success. We are particularly struck with the satisfactory and pleasant relations which appear to exist between Dr Palm and the native practitioners. This bodes well, not only for his own success as a missionary, but for the progress

of European surgery and medicine in that interesting country. In confirmation of these remarks, we may quote his own words: "Of these (5172 cases) above 1500 have been treated in co-operation with native physicians in the country, at the different stations visited regularly every month, the native doctors supplying the medicines and carrying out my directions. The opportunity is also taken of giving them some clinical teaching. Some serious operations have been undertaken in the country, and the patients left in their charge. They have been instructed in the principles and practice of antiseptic surgery, but in some cases have failed to carry it out. They are intelligent and fairly educated men, as a rule, that I have to co-operate with, and are anxious to improve in their profession. They have lately formed a society for the discussion of medical subjects and mutual improvement, and have requested me to preside over their meeting once a month, and give them a lecture on some medical subject. I have arranged to do so."

Cholera in Relation to Certain Physical Phenomena: A Contribution towards the Special Inquiry sanctioned by the Right Hon. The Secretaries of State for War and for India. By T. R. LEWIS, M.B., Surgeon, British Medical Service; and D. D. CUNNINGHAM, M.B., Surgeon, Indian Medical Service. Special Assistants to the Sanitary Commissioner with the Government of India. Calcutta, 1878.

THIS contribution appeared as an appendix to the Thirteenth Annual Report of the Sanitary Commissioner with the Government of India, and, as now published separately, will be indispensable to all who may wish to work up the etiology of cholera from original sources. It contains an enormous mass of facts classified and tabulated in a great variety of ways, but with a result that we regret to say can only be regarded as negative by the practical physician. The work bears ample testimony to the learning and industry of the authors, and if they have been rewarded by no striking discovery in medicine, they have the satisfaction of knowing that exact information regarding climatic and other physical phenomena, such as they here present, is the only basis for a useful knowledge of the etiology of cholera. The authors discuss various theories, with the conclusion that "the theory which regards conditions of the soil as essentially determining the production of the cause of cholera in a locality, is much more in accordance with the phenomena of its seasonal prevalence as manifested throughout the Bengal presidency than any of the other doctrines appear to be."

Galvanism in the Treatment of Sciatica. By V. P. GIBURY, A.M., M.D., Indianapolis. 1879.

THE more numerous are the vaunted cures for a disease, the more certain is it that our knowledge of it is but slender. Neuralgia is a name which hides more ignorance than any other in the vocabulary of medicine, and of all neuralgias sciatica is the one which has been most be-physicked. When the unhappy patient has run the gauntlet of the pharmacopœia, then the surgeon attacks him with blisters and cauterly and acupuncture and stretching of his nerve. And with it all, we know so little of the nature and cause of pure sciatica that only a few are benefited, and of not one can we say beforehand this remedy will be effectual. So it is with galvanism, whatever Dr Gibury may say. Nevertheless, he is right in saying that the only method of electricity which is likely to give relief is a powerful, constant current applied without interruptions. It may be well applied, which Dr Gibury does not seem to know, by using a needle coated with vulcanite for the negative electrode.

Lectures on Electricity. By A. D. ROCKWELL, A.M., M.D.
New York: Wood & Co. 1879.

WE are getting rather tired of Drs Bearel and Rockwell, together and separately. They do know something about their subject. So much the worse is it, for to get at the little grains of truth and knowledge you have to wade through an enormous amount of chaff. Perhaps that is inseparable from the subject.

Naval Hygiene. By JOSEPH WILSON, M.D., Medical Director, U.S. Navy. Second Edition. Pp. 272. Philadelphia: Lindsay & Blackiston: 1879.

THIS is a large, closely-printed octavo, elegantly got up as to paper and binding, and illustrated by diagrams and botanical plates, coloured to the life. It is not written exclusively for professional readers, but contains a popular element which must render it a valuable instructor and guide to ship captains and other sea-going people placed in positions of responsibility. The information communicated is ample, and appears to be reliable. The author, moreover, can speak with the authority and precision of one who has experienced what he describes and recommends. His remarks on food, and the modifications which it may undergo in various climates and under special circumstances, are important; while the

vexed subject of *scorbutus*, or scurvy, receives a due measure of attention. The idea, however, which Dr Wilson more than once ventilates, that the essential characteristic of antiscorbutic articles of diet is, that they contain the nitrogen compounds in the same state in which they exist in *living* plants—seeds, for example, still possessing the germinating property—seems to require modification, or at least farther explanation. The author is very near the true state of the case, but we would recommend to his notice the views advanced by Mr M. F. Anderson, of Coventry, in his recent work, *Phosphates in Nutrition, and the Mineral Theory of Consumption and Allied Diseases*; *Edin. Medical Journal*, November 1878.

That gentleman has shown, we think, that even although *pemican* and biscuits—which contain large proportions of phosphoric acid, potash, and other mineral ingredients—are taken into the stomach, they are of little use as nutrients, unless the phosphates be in a soluble condition. That condition is effected by means of *citric acid*. Lemon-juice contains, it is true, both phosphoric acid and potash, but in quantities so infinitesimal—.22 and .30 per cent.—as to have no appreciable effect in nourishing the system. Biscuit contains ten times as much potash, and a supply of phosphoric acid quite sufficient for dietary purposes, *if these ingredients were in solution, or capable of being rendered so by a proper solvent*. “The antiscorbutic action of lemon-juice is thus reduced to its *citric acid*, and the efficacy of this depends upon the conversion of *insoluble* phosphates into *soluble*, for the formation of tissue phosphates.”

“Beans,” Dr Wilson says, “are good food in every situation; but their great excellence at sea is referable,” not, as he imagines, to the mere fact that they are seeds still living and possessing the germinating property, but also to the corresponding fact that the phosphates contained in them are more or less in a soluble condition. If the beans have become dry, hard, and incapable of germinating, their phosphates will need to be rendered soluble by *citric acid*, or some other available agent, otherwise the system will be insufficiently supplied with nutriment.

It may be suggested, for the consideration of Dr Wilson and other authorities on hygiene, that the tissue phosphates prepared chemically by Mr Anderson, and prescribed by him successfully in phthisis, scrofula, and other maladies, might be added to the stores of vessels proceeding on long and uncertain voyages, and systematically distributed along with the ordinary rations when scurvy threatens the ship's company.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LVIII.—MEETING VIII.

Wednesday, 6th May 1879.—Professor SANDERS, *President, in the Chair.*

I. *Dr A. G. Miller* showed a PATIENT sent to him last September by Dr Dewar of Kirkcaldy, suffering from OSSEOUS ANCHYLOSIS of the lower jaw on the right side, depending on a previous necrosis. For ten years she had been unable to open her mouth. Forcible opening some time ago, by Dr P. H. Watson, had failed to give any relief, and therefore in Dr Watson's absence, he performed Esmarch's operation of removal of about an inch of the jaw, in order to make a false joint. The result was, that the patient could now open her mouth fairly, and masticate tolerably well.

II. *Dr Cadell* showed a patient with some symptoms of LOCOMOTOR ATAXY, but with the patellar tendon reflex present.

III. *Dr W. A. Jamieson* exhibited A PATIENT aged 16, with what he believed to be LUPUS SYPHILITICUS HEREDITARIUS on the face, completely healed. The disease began seven years ago in the soft palate, destroying the uvula and part of the velum. It then attacked the nose, and spread down on the lip. She was sent to him in October 1877 by Dr Affleck, and the nose was the seat of exuberant granulations, which blocked up the nostrils, and secreted a glairy purulent fluid which dried into crusts. The surface was scraped with the sharp spoon, and dressed with diachylon ointment. Healing for a time progressed, then cicatrization ceased, and the disease was scarcely more than kept in check. Scraping was twice repeated, various lotions and ointments used, and tonics and cod-liver oil given, but in March of the present year it was worse than ever. Dr Jamieson, in a clinical lecture by Professor Zeissl of Vienna, learned that the chief diagnostic point between lupus vulgaris and lupus syphiliticus hereditarius was, that in the latter ulceration of the soft palate was the rule, in the former the exception. Acting on this, he again scraped the diseased part, dressed it with a lotion of chloride of zinc, four grains in the ounce, and administered ten grains of iodide of potassium thrice a day. This was on 12th March; on the 2d April the parts were entirely healed, and the result as regards appearance singularly satisfactory. In reply to a question by the President, Dr Jamieson stated that

the family history was defective. The girl was an only child, had neither pegged teeth, nor any trace or history of interstitial keratitis. As to coryza or rash in infancy, nothing could be learned. The case was evidently not one of scrofulous lupus.

IV. *Mr Bell* showed—(1.) A SPECIMEN given him by Dr Caruthers of Melville Street. The history of the case was, that twenty-eight years ago a man's hand was injured in Barnton Quarry, and on incision, the small piece of granite was extracted, which had evidently been encapsuled for this long period. (2.) A FATTY TUMOUR removed from the palm of an old woman. Her account was, that it had been there for twelve or fourteen years. It had been treated for compound ganglion. But although Mr Bell thought it was this, still the diagnosis was puzzling. Fluctuation could be made out. There were projections up into the sheaths of the flexor tendons. On incision, its true nature was found to be as already described. The whole of it was removed, and now union was going on well.

V. *Dr Clouston* showed MICROSCOPICAL SPECIMENS OF THE BRAIN AND LUNGS prepared by Dr D. J. Hamilton. The patient was an epileptic, who, after continuous fits lasting for three days, died comatose. In the veins of the pia mater there were well-marked fibrinous masses, and many of the capillaries of the lungs were plugged with fatty embolisms. There had been no diabetes, no fracture, and no ordinary disease of bone, but the ribs were friable, and their cancellated texture loose and filled with grumous fluid.

VI. *Dr P. H. Watson* showed—(1.) A SPECIMEN OF DISEASE OF THE KNEE-JOINT, commencing in the hard textures. It had apparently begun in the patella, and then occasioned acute effusion into the knee-joint. From the tension produced by this the tibia and femur had become affected. (2.) The DEBRIS OF A URIC ACID CALCULUS crushed by lithotomy in a patient from Yorkshire, who had previously passed two stones per urethram, composed of oxalate of lime. As the present one was arrested in the prostatic portion of the urethra, Dr Watson pushed it back with a No. 16 bougie into the bladder and then crushed it.

VII. *Dr Byrom Bramwell* showed a SCROFULOUS TUMOUR OF THE CEREBELLUM.—The notes of this case are published in full, page 1073 of this Journal for June 1879.

VIII. *Dr Groves* of Trinity showed a large quantity of COAL, WOOD, CORK, EGGSHELLS, etc., which he had removed from the RECTUM of a weak-minded lad.

IX. *Dr D. J. Hamilton* then read NOTES ON THE HEALING OF WOUNDS.

The President had listened with great pleasure to Dr Hamilton's interesting paper.

Professor Spence, in rising to make a few remarks on Dr Hamilton's paper, said that the subject of union of wounds required to be studied from the practical as well as from the pathological point of view. As to union by first intention, his views quite coincided with those of Dr Hamilton. He had always noticed that there was little callus in well-set fractures, and the same holds good in wounds of the soft parts. If there was accurate apposition, and no irritation, there was very little new material. In regard to secondary union, the Edinburgh School had long pointed out that granulations must disappear, and that they were often the sign of unhealthy action. This was well seen in weak ulcers, where they required to be destroyed. Syme had pointed out that contraction was the method by which a wound healed; and no surgeon nowadays held that a wound healed by filling up, and becoming covered with epithelium on many points; therefore Dr Hamilton and surgeons agreed. He was interested in Dr Hamilton's experiments on catgut. His own opinion was, that it was useful in proportion to its solubility. It did well in a mamma or in a stump, although hæmorrhage might occur; because the ligature loses its constrictive power. The problem now was how to prepare the catgut so that this constrictive power would be preserved until the changes in the vessel had occurred. In a case of his where he tied the carotid, the patient died suddenly. On post-mortem examination the ligature was found *in situ*, but quite jelly-like, and therefore without any constricting power. He was anxious to have this point cleared up, and had hinted more than once to his class that a careful series of experiments on living animals in regard to this would be a great step in advance. The chromic-acid catgut was too hard. Dr Hamilton's experiments were important, as they showed how catgut was got rid of, by its solubility, in most cases. He had great pleasure in listening to Dr Hamilton's paper, and he would have still greater satisfaction in reading it.

Dr Foulis showed, in connexion with Dr Hamilton's observations, a number of OVARIES from the SHEEP and COW. In each of these one or two large Graafian follicles could be seen, occupied by what was called blood-clot. It was not blood-clot, as there were no blood corpuscles in it, but an albuminous substance, which bled when scratched in the living animal. These clots were known as corpora lutea. He had made sections of such follicles, and found that from being the size of a walnut they disappeared until nothing was left but a small cicatrix of fibrous tissue. It struck him that this vascularization of the corpus luteum was really the same as the organization of blood-clot; and in the ovary this organization took place under the strictest antiseptic conditions. In the healthy Graafian follicle the follicular wall was very vascular, but no blood-vessels passed into the cavity of the follicle until it was occupied by the clot known as the corpus luteum. From the vessels in the wall of the follicle, numerous off-shoots pass into the substance of

the corpus luteum, which thus becomes vascularized. The young bloodvessels are accompanied by young connective tissue, which increases, and by its gradual contraction the enlarged Graafian follicle, with the corpus luteum, is gradually obliterated. It struck him that this healing of the Graafian follicle was similar to the healing of wounds by first intention, as described by Dr Hamilton.

Mr Chiene had been much pleased with the paper, which to him was a series of surprises. The fact that the glazing of the wound was due to lymph-fibrin was interesting. As to the organization of the blood-clot, he always understood that its vascularization was meant by this. He was happy that Dr Hamilton agreed with Goodsir as to the part the connective tissue corpuscles played. Dr Hamilton had said that granulations appeared in twenty-four hours; this was too soon, however. The experiment to show the bulging out of the capillaries was very beautiful, but he did not feel it convincing. The fact that catgut may be absorbed in dead tissue was interesting, but it did not prove that the cell elements did not help. Wounds seemed to him to heal by blood-clot, coloured or colourless. The latter was really lymph-fibrin.

Dr P. H. Watson felt that this paper added to the deep indebtedness of the Society to Dr Hamilton for his many and able inquiries into disputed points in pathology. The present communication was a monument of work; and that Dr Hamilton, at the end of an arduous winter session and beginning of a summer one, should have found time for this excursus, was a matter of congratulation. The large diagrams they saw illustrating the paper had seemed to him at first more suggestive of the seat of war than anything else, and had taxed his ingenuity to refer them to any known locality. Be that as it might, there could be no doubt that by this paper Dr Hamilton had established a scientific frontier in a debatable territory, and pricked many airy balloons of previous theorists. With many of Dr Hamilton's views surgeons were familiar in the rough; but while the results met with his most entire approval, they required at the same time in the details of observation and experiment most careful consideration. He thought Dr Hamilton deserving of their best thanks.

Dr D. J. Hamilton thanked the Society for the cordial reception given to his paper. He was hardly entitled to the high praise they had given him, as it was the work of many years. As to the catgut, it would not disappear in an ichorous wound with an air reaction. Foulis's remarks supported what he had seen in the closure of other apertures. The glazing material was not fibrin, but gave the reaction of an alkali albuminate. Paget and Lister said granulations would form in twenty-four hours. The capillaries in an amputation were not all occluded, as some were cut. He did not deny that cell elements did not remove catgut after it had broken down; but the catgut must become granular first.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION XXXVIII.—MEETING IX.

Wednesday, 9th April 1879.—Dr WILSON, President, in the Chair.

Mr Hamilton, of Hawick, was admitted an Ordinary Fellow.

I. *Dr Keiller* exhibited a mutilated FÆTUS which he had delivered by embryotomy. The case was one of contracted pelvis, and occurred in the practice of Dr Hardie, of Leith. Turning was attempted, and afterwards the head was perforated. When Dr Keiller arrived the patient looked very ill; there was great tumidity of the external parts, and all the evidence of protracted severe labour. The woman had borne a dead child previously. He found the head perforated, and a hand alongside. He first of all tried to push back the prolapsed arm which interfered with the efforts made to turn, but found this impracticable. The cephalotribe, crotchet, and cranioclast were severally applied, but without success. He was therefore forced to break down the head, and remove it bit by bit, which occupied a long time to accomplish. Thereafter the child was easily delivered by bringing down the arms. Altogether he had seldom had a more troublesome case to deal with, except, strange to say, in another of Dr Hardie's patients about ten years ago, the particulars of which case he reported to the Society, and exhibited the greatly mutilated child, which he still used as an illustrative class preparation.

II. A discussion then took place regarding the various proposals lately brought forward chiefly through the instrumentality of the Obstetrical Society of London for the better EDUCATION OF MIDWIVES.

Dr Charles Bell did not attach much importance to the starting of any movement in this direction in Scotland, however necessary it might be considered in England, as in Scotland comparatively few midwives were employed, and as all midwives are also ladies' nurses, they would escape registering under the plea that they were merely nurses. The propriety of registering midwives had been admitted in Scotland as far back as 130 years ago, when an Act was passed by the Town-Council of this City, rendering it imperative on all midwives to be registered; and a license was granted to them signed by at least four Magistrates, receiving a certificate of their qualifications from a Member of the College of Physicians and one from a Member of the College of Surgeons. The register was kept by the Town-Clerk; and if any one presumed to act as a midwife who was not registered she was severely fined. But this regulation has long been disregarded.

Dr Peel Ritchie thought it very desirable that the Society should give an expression of its opinion on this question. The Obstetri-

cal Society of London had always wished this Society to go along with them in this matter. He thought in Edinburgh, and Scotland generally, there was need of reform. There were two classes of women here who practised midwifery—1st, the educated; 2d, the uninstructed. As showing the ignorance of some women who attend cases in Edinburgh, he mentioned he had on one occasion been called to see a woman in which a midwife had been for some days in attendance, and found that the patient was not only not in labour, but not pregnant. He agreed with Dr Bell that all women practising midwifery should be properly educated and registered. He had much pleasure in moving the following resolution:—"That the Edinburgh Obstetrical Society approves of the principle of the proper education, examination, and registration of midwives, and refers to the Council to take such action in the matter as they may deem advisable to carry out these views."

This was seconded by *Dr Keiller*, and after some remarks by Dr Rattray, Dr Stewart, Dr Young, Dr James Carmichael, Dr Croom, and Dr Underhill, the general tenor of which went to prove the incompetency of many women at present engaged in the practice, the resolution was unanimously agreed to by the Society.

III. *Dr M'Watt* read NOTES OF A CASE OF HYSTERO-EPILEPSY, aggravated by pregnancy and necessitating premature labour, which appears at page 114 of this Journal.

Dr Wilson thanked Dr M'Watt for his communication.

Dr Keiller asked Dr M'Watt if he had performed any experiments to test the value of metallo-therapy in these cases, and reflex methods of treatment now so much in vogue. He mentioned a case where a very special method of treatment was had recourse to, and remarked, that so called hystero-epilepsy is a subject very difficult to prove by the vaunted results of experiments on the influence of application of selected metals, etc. How far the symptoms in such cases are consequent on mere mental emotion or the influences of a malingering spirit has not yet been sufficiently determined; and as to the curative effects of metallic or other modes of pressure which experimental investigations have laboured to settle, there is no small reason to suspect the telling influence of "expectation" and of suggestion.

Dr Rattray referred to the moral benefit in some cases of proposing the use of some stronger method of treatment. He did not now feel any difficulty or doubt as to the general principles of dealing with such cases. Careful moral treatment, including proper mental and bodily occupation, accompanied by cold douche and such remedies as bromide of potassium, was generally sufficient.

Dr Bell thought the case one more of pure hysteria than hystero-epilepsy. He did not think it desirable to use or threaten any harshness in the treatment of these cases. He mentioned the

case of a lady he had been called to see in Argyleshire, who was supposed to suffer from spinal disease, as she lay in a peculiar position calculated to simulate such a condition. On careful examination he came to the conclusion that the case was one of hysteria, and expressed an opinion accordingly—the correctness of which had been amply vindicated by patient's recovery.

Dr James Carmichael mentioned a case of hystero-epilepsy under his care. The fits come on at or immediately before a menstrual period. An attack could be excited by pressure over the region of the ovaries. Great benefit had been derived by the use of full doses of bromide of potassium during the active period. He had not made any experiments with metallic or other discs.

Dr Underhill should have liked an opinion as to the significance of relation between epilepsy and pregnancy, whether the convulsive attacks were allayed or aggravated by the pregnant condition. His impression was that in the majority of cases the fits were less frequent during pregnancy than at other times.

Dr Hart had seen several cases of this kind in the Infirmary. In one true case of hystero-epilepsy, a fit came on during a vaginal examination, complete anæsthesia being present. Suprapubic pressure did not stop the fit. He considered *Dr M'Watt's* case an interesting one.

Dr Croom complimented *Dr M'Watt* on his treatment in this case. It had been carried out, in his opinion, on proper principles.

MEETING X.

Wednesday, 23d April 1879.—*Dr WILSON, President, in the Chair.*

I. *Dr James Young* read a paper on ENDOMETRITIS and MENORRHAGIA, treated by intra-uterine medication.

The *President* briefly thanked *Dr Young* for his paper.

Dr Burn, although he believed such cases as *Dr Young* had mentioned were not common, could not deny having at times met with them. He had little experience of intra-uterine medication, but had not found the morbid conditions alluded to by *Dr Young* predispose to sterility.

Dr Rattray had found the same plan of treatment as recommended by *Dr Young* beneficial. He was in the habit of using nitrate of silver, 15 to 20 grains to the ounce of water, or tincture of iodine, with advantage. He agreed with *Dr Young* as to the need of a combination of constitutional with local means in treating leucorrhœa. He observed that *Dr Young* did not recommend any local external means, or such remedies as calomel and opium internally.

Dr Young, in reply, thanked the Society for the reception given

to his paper. He would only say in addition, that he was in the habit of following the generally accepted rule of combining blisters and other external applications with constitutional treatment in some cases. He specially wished to know the experience of Fellows in regard to the effects of nitric acid by injection, as a cause of sterility.

II. *Dr Goodall Nasmyth* communicated, through Mr Thatcher, a case of PROLAPSE OF THE UTERUS, WITH EVERSION OF THE VAGINA COMPLICATING LABOUR, which appears at page 116 of this Journal.

The *President* thanked Dr Nasmyth for his paper.

Dr Young thought the case an interesting one, but not opening up a field for much discussion. Pessaries were not often required during pregnancy. In one case, however, which he had seen, the patient wore a pessary during the whole term of uterogestation without bad effects.

Dr Church mentioned a case of prolapse of uterus and vagina he had lately seen, in which the vaginal eversion quite disappeared during pregnancy. So decided was the relief from this condition during pregnancy that the patient was well aware of its occurrence on account of the gradual and steady relief from the vaginal eversion during the whole period.

Dr Wilson mentioned having lately met with a similar case to that of Dr Nasmyth's. He had been obliged to induce premature labour.

III. *Prof. Walley* showed a specimen of A DICEPHALUS BISPINALIS QUADRUPES CALF. The monster had two necks, heads, spines, and tails. The four legs were perfect. The internal organs were fully developed and perfect, but single. The specimen had been sent to him by Mr Taylor, of Seaford, Ireland.

Dr Craig thought the Society was indebted to Mr Walley for showing them this monstrosity. He considered it a good specimen of the kind. His belief was that the animal was a single individual, the monstrosity being the result of the division of a single ovum, and not from the union of twins.

Dr Rattray trusted Mr Walley would give the Society yet a few more particulars of the case.

Mr Walley thought the specimen more likely to result from the fusing together, as it were, of two ova than the splitting of one.

MEETING XI.

Wednesday, 28th May 1879.—Dr WILSON, *President, in the Chair.*

Mr Alexander Davidson, M.B., M.R.C.S., Dr John S. Cowan, and Dr Thomas Milne, were admitted Ordinary Fellows.

I. *Dr Hart* showed, for Professor Simpson, an OVARIAN CYST which he removed some time ago. It was exhibited for the purpose of enabling Professor Simpson to state his opinion of the great value of the silk ligature as a means of treating the pedicle.

II. *Dr McRaid* of Greenock showed an OVUM about a month old, which was aborted in consequence of a fall, which caused apoplexy of the placenta.

III. *Dr Keiller* showed a UTERUS and two OVARIAN TUMOURS which were removed from a woman who was admitted into the Maternity in labour from a distance, and where there had been difficulty in making out the nature of the case; there was a projecting tumour and distinct fluctuation on the right side. The uterus was pressed over to the left side. The os was high up; behind and above the pubes a swelling obstructed the head from coming down; this was fluctuating, and appeared to be connected with the mass on the right side. *Dr Keiller* aspirated this fluctuating tumour through the vagina, and drew off $9\frac{1}{2}$ pints of grumous fluid, which permitted the head to engage in the brim. A living child was delivered by means of the forceps. Subsequent examination showed that the cyst in the left ovary had been tapped, which had been below the presenting part of the child down into the right side of the pressed pelvis. The case showed the difficulty of exact diagnosis. *Dr Keiller* showed a drawing of the external appearance of the abdomen, also that of another case of the same kind, which was left alone, the patient doing very well.

IV. *Dr Macdonald* communicated NOTE OF A CASE OF PUERPERAL CONVULSIONS WITH ALBUMINURIA; spontaneous easy labour; recovery; by *Dr Osbert Wilson* of Huntly, which appears at page 139 of this Journal.

Dr Macdonald observed that the case was a very good example of the natural history of a simple case of eclampsia. From considerable experience of this disorder, and of its management, he was more and more inclined to believe that in mild cases, unless there is some very urgent necessity for interference, the best practice is to leave the labour to go on to its natural end, without interference by operative measures, such as *accouchement forcé*, etc. He had tried bromide of potassium and chloroform, as well as bleeding and hydrate of chloral, and had come to the conclusion that the latter drug was most reliable. It is very puzzling how many of those cases of the most severe form recover, in spite of every obstacle, and without treatment after. Such results render it very difficult to properly estimate the effects of treatment. Again, how does it happen that in these cases the child is so often lost? Why does it die? A similar case had occurred to him, and been recorded some time since, and it is an acknowledged fact

that, after one or two severe convulsions, the child is frequently born dead, as in the present instance. Whether the child is poisoned by the condition of the mother's blood, or is suffocated during the eclamptic seizure, or dies from some other cause, is still unknown. It was noticeable that the pulse was slow, and said to have been small and weak in the present case. This was extremely interesting to him, as it bore out to some extent an idea which he had suggested in a recent paper upon the etiology of eclampsia. He was inclined to believe that in this case the pulse was small, but of high tension, and he regarded this condition of it as indicative of the existence of vasomotor irritation, as he had attempted to prove in the paper referred to.

Dr Underhill called attention to the fact, that in cases of albuminuria in pregnancy, the foetus frequently died at a more or less advanced period of the pregnancy, and miscarriage ensued without the occurrence of convulsions. In a case recently under his care, the albumen began to decrease as soon as he had reason to think the foetus was dead, and was much diminished when miscarriage occurred six weeks later.

Dr Keiller approved of the practice employed in this case. It is safe enough to trust to nature in many cases. The difficulty is to decide not only how but when to interfere. The life of the child is to be considered as well as that of the mother. The child may be expelled spontaneously without any evidence of pain or expulsive efforts on the part of the mother, and therefore the progress of the case ought to be watched, and if need be expedited to save the child's life if not yet dead, and also to give the mother the best chance of recovery, which the emptying of the uterus went far to secure. He should not interfere with the earlier stages as a rule, though occasionally it is useful. In a very bad Maternity case, where the child was born alive, and rapid recovery of the mother took place, the patient was put and kept under chloroform until she was delivered. It is often of use to bleed, as was done so much in earlier days of practice, and now too much neglected; his most successful cases had been so treated.

Dr Burn said that in his younger days almost all patients with convulsions were bled—indeed most women who were long in their first labour were bled.

Dr Craig had a case of convulsions lately, a primipara. The child was born alive; she had a number of fits. When seen she was in the first stage. Chloroform was given. Manual dilatation of the os, followed by application of forceps, succeeded very well. No convulsions came on after labour. He would like to know at what time the child died in the case before us. Might it not have been saved had labour been brought on at first.

Dr Macdonald had bled on one occasion, when it proved a valuable aid in checking the fits and dilating the os. He believed and had endeavoured elsewhere to prove that blood-letting had

very much the same effect as chloral in convulsions, namely, they both depressed the vasomotor nerves, and thus tended to lower the blood-pressure.

Dr Spence had had a case where there was albuminuria, in which a living child was born, and convulsions came on seven hours after labour.

Dr M'Raild ventured to suspect that puerperal convulsions were not so frequent or so dangerous as they used to be. He had seen several cases of severe convulsions in pregnancy—opisthotonic spasms. In some of these there was no albuminuria; others, again, had some spasm during labour and severe convulsions after. These he had treated quite successfully by croton oil. He had no doubt there was some poison in the blood in such cases.

Dr Carmichael mentioned a case of convulsions in a primipara in which he bled to thirty ounces. Both mother and child survived. The os was very small and rigid before the bleeding, but yet the labour was over in an hour after.

In answer to *Dr M'Raild*, *Dr Keiller* thought some of the cases he mentioned were very likely hysterical, such as have no association with albuminuria, specially those with opisthotonos.

V. *Dr Macdonald* read NOTE OF A LABOUR IN A PATIENT AFFECTED WITH LOCOMOTOR ATAXY, which appears at page 121 of this Journal.

Dr Burn had rarely seen adherent placenta when its surface was calcareous.

Dr Macdonald had a case of locomotor ataxia under his care at present, in which the disease had no effect on the menstrual function.

Dr Keiller mentioned a similar one.

Part Fourth.

PERISCOPE.

MONTHLY RETROSPECT OF OBSTETRICS AND GYNÆCOLOGY.

BY ANGUS MACDONALD, M.D.

EXTIRPATION OF THE OVARIES AND THE CANCEROUS UTERUS BY ABDOMINAL SECTION.—In No. 11 *Centralblatt für Gynäkologie*, 1879, this question is discussed anew by Dr J. V. Massari, and the account of a case given in which the operation was unsuccessfully performed for the removal of malignant disease of the cervix uteri. The operation failed in consequence of the right ureter having been accidentally included in the ligaturing of the right broad ligament.

To avoid such accidents in the future, the author proposes, previously to attempting this operation, to catheterize the ureters. He expresses himself confident of his ability to do this with the aid of an apparatus devised by Dr Niezza, and executed by Mr Leiter, an instrument maker. This apparatus is constructed so as to sufficiently illuminate the interior of the bladder to allow of the detection and catheterization of both the ureters within a few minutes. The author proposes to introduce gum-elastic catheters into the ureters before commencing the operation, and to allow them to remain there, doing it so as to make certain that these organs shall not be ligatured or injured. Great care is also required to avoid sepsis and to prevent hæmorrhage. The latter, however, is not more difficult to treat than in connexion with a severe ovariectomy. The author looks upon the total extirpation of the uterus, which is the seat of malignant disease, as being of the nature of a *palliative* operation of great value, whose beneficent effects may be expected to be greater the earlier in the period of the disease it is undertaken. He considers the difficulties in operation as quite superable with care. The advantages of the operation are prolongation of life, and relief from many days of suffering. A complete cure of the disease can hardly be expected.

A NEW METHOD OF EXTIRPATION OF THE UTERUS.—In connexion with V. Massari's paper, we may mention another, with the above title, by Staff-Surgeon Dr B. Credé, Dresden, published in Bd. xiv. s. 430, *Archiv für Gynäkologie*. The author recommends the adoption of a somewhat extraordinary procedure in order to obtain a thorough exploration of the pelvic cavity, to make certain that all cancerous nodules are removed, and to secure against hæmorrhage by tying the vessels *seriatim*, as also to avoid the use of bulky ligatures for securing the broad ligaments, and bringing together the peritoneal surfaces. His method is partial resection of the pubic bone. This he proposes to do ten days or so before the main operation, by first making a longitudinal incision down to the bone in the mesial line, over the pubis, for about $3\frac{1}{2}$ inches, the lower end terminating in the clitoris, but avoiding the peritoneum. Then the bladder is held up with a blunt spatula, and the periosteum removed from the body of the bone outwards to the commencement of the transverse ramus, by means of a bone-scraper. This, the author says, is easily effected, except at the points where the recti muscles are inserted, where a knife must be used. The transverse rami of the pubic bones are then cut through by means of a chain-saw, the incision being made at the inner extremities of each foramen ovale, so as to avoid wounding the epigastric and obturator arteries. The next procedure is to pass the chain-saw round the pubic bone in a transverse plane, passing through the two lower anterior angles of the foramina ovalia, in order to cut through the bone, so as to leave only about a centimeter ($\frac{2}{3}$ of an inch) of

bone, joining together the two descending rami of the pubis. This being effected, the author recommends the wound to be closed up, and the patient left for a week or ten days to recover from the after effects of the operation. The next step is to make a mesial incision extending from the umbilicus to the clitoris, thereby laying open the whole of the previous incision. The uterus is now well elevated by a ligature passed through the fundus, its lateral attachments divided, and the vessels tied one by one. This is easily effected, as the length of the incision and the absence of the greater part of the anterior covering of the pelvis afford both room and light. A catheter is introduced into the bladder, and the peritoneum is carefully divided around the base of the uterus, and the latter divided from the vagina. If any cancerous nodules are observed they are carefully taken away. The bleeding points are secured, the cavity is disinfected, and the abdominal wound is again closed up. The third step of the operation consists in bringing together the roof of the vagina in such a manner as to make the sewed portion project into the vagina in a wedge-shaped manner. The author does not attempt to secure adaptation of the peritoneal edges of the wound. He holds that this is not necessary. The advantages which Dr Credé claims for this certainly formidable procedure are stated by him as follows:—1. It secures sufficient room, in order to recognise with greater certainty possible malignant deposits and adhesions on the surface of the uterus, and to enable us to remove them. 2. It affords somewhat wider limits to the extremely narrow indication for Freund's operation. 3. It permits the bleeding to be more easily mastered and more certainly averted. 4. It materially shortens the duration of the main operation, especially by not necessitating the closure of peritoneum in the small pelvis, and thereby it injures the general condition of the patient less. Dr Credé admits that there are some drawbacks, such as the probability of ventral hernia, in case there is not good formation of callus in the site of the body of the pubis, as the recti muscles have no adequate insertion. He has operated often on the dead body, but only once on the living. In that case the patient died of exhaustion six hours after the operation. Dr Credé in this case performed the whole operation at one sitting. Nothing daunted by this want of success, Dr Credé proposes to continue his prosecution of this truly formidable so-called improvement of Freund's operation, and to report in due course.

PORRO'S METHOD OF CESAREAN SECTION.—At page 266 of the *Centralblatt für Gynäkologie* for 1879, an account is given by Dr Dorff of an operation essentially the same as that known as Porro's method of Cesarean section, and which was performed by von Hegar of Freiburg before he had heard of Porro's plan. The patient operated upon was affected with extreme pelvic deformity resulting from a lumbo-dorsal kyphosis. The abdomen and uterus were opened

by von Hegar, and a living healthy female child removed, which was alive and well two months after the operation. The uterus was then pulled out of the abdomen, a curved Polan's needle carrying a double ligature passed through the body of the organ, immediately above the inner os. The ligatures were then firmly tied, and the uterus and ovaries removed above the constricted part by means of a chain *écraseur*. The abdominal cavity was then cleaned out, the stump dropped in, and the abdominal wound closed. The patient did well for two days, but ultimately sank.

CESAREAN SECTION, WITH TEMPORARY LIGATURE OF THE CERVIX BY ESMARCH'S BANDAGE, ON ACCOUNT OF THREATENED RUPTURE OF UTERUS IN A CASE OF EXTREME PELVIC CONTRACTION AND RIGID CERVIX.—In No. 12 of the same journal a case is recorded by Litzmann of Kiel, in which this method of controlling hæmorrhage at the operation was adopted without removing the uterus, as Porro recommends. Strict antiseptic precautions were observed. The uterine wound was sewed with catgut ligatures. The abdominal wound was sewed with silk stitches. The child was saved in this case. The mother died eighty-five hours after the operation under symptoms of protracted shock. Litzmann makes the following observations in conclusion upon this case:—1. The temporary ligature of the cervix had neither injured the child nor diminished the contractile power of the uterus. 2. The closure of the uterine wound by a suture had sufficiently fulfilled the means of arrest of hæmorrhage, notwithstanding the subsequent loosening of the knots. The loosening of the knots was due not to the material, but to defective tying of them (a granny instead of a reef-knot). The force of resistance of a catgut ligature tied in a reef-knot was subsequently sufficiently established by us in an experiment with thick tangle-tents laid in water after tying them. 3. According to the clinical symptoms, which enable us to recognise essentially a persistently increasing paralysis of heart and bowel muscle, as well as according to the results of post-mortem examination, the fatal issue is to be considered as due to severe shock of the nervous system, brought about partly by the enormous distension and tension of the cervical wall antecedent to the operation, partly by the operation itself. In regard to the latter, the great cooling of and unavoidable mechanical interference with the bowels in connexion with the prolapse of the intestines, which was only reduced slowly with considerable force, must be considered as specially important factors.

THE ANATOMICAL PROOF OF THE PERSISTENCY OF THE CERVIX IN PREGNANCY is the subject of a long and excellent article by Dr M. Sänger of Leipzig, in Bd. xiv. s. 389, *Archiv für Gynäkologie*. After an elaborate historical criticism of this vexed subject, in the course of which the writer controverts with great ability the views of Bandl and Küstner on this subject, the author gives an account of the condition of the cervix uteri in the case of a patient who

had died suddenly in a convulsive seizure about the end of the ninth month of utero-gestation. Cesarean section was performed immediately after death by Professor Crédé, and the state of the uterus, and especially of the cervix, was carefully determined by Dr Säger. It was found that the *plicæ palmatæ* of the mucous membrane of the cervix were perfectly intact, and that the membranes covered with the decidua ran closely down to the edge of the cervical mucous membrane. It was impossible to doubt where the cervix ended, and where the lower uterine segment began. There was no intermediate space, as is insisted upon by Bandl and Küstner, between what they call the inner os and ring of Müller. The anatomical evidence of the case, more especially when subjected to microscopical examination, in the most emphatic manner supports the view of the persistency of the cervix during the whole course of pregnancy until near delivery, and contradicts flatly the view, that in any sense the cervix is used up in such a manner as to amplify the lower uterine segment. In Dr Säger's case there was no elevated ring at the junction of the cervix and lower segment of the body, as in Müller's case (lately given in this Journal, p. 595, vol. xxiv.), but the cervix and body of the uterus ran directly the one into the other in the same plane. Dr Säger thinks that though anatomical evidence is the most reliable in deciding this question, careful clinical observations, taking care that the soft cervix is not shortened unnoticed during the exploration, is also of great value as corroborative evidence of the persistency of the cervix. The dimensions of the vaginal portion of the cervix in Dr Säger's case are as follow:—Anterior wall, 1·5 centimetres, = ·6 inch; posterior wall, 2 centimetres, = ·8 inch; the breadth of its base at the highest part of the vaginal end, 2·5 centimetres, = 1·0 inch.

DEATH DURING PREGNANCY UNDER SYMPTOMS OF BLEEDING HAVING OCCURRED. COMPLETE CHRONIC ADHESIVE PERICARDITIS. RELATIVE ANÆMIA. CARDIAC PARALYSIS.—This is the subject of a brief paper by Säger following the one abstracted above. The case referred to is that of the same patient, an examination of whose uterus was the groundwork of the paper upon the persistency of the cervix. The patient was brought to hospital by a nurse, who stated that she had lost a great amount of blood, apparently from the sexual organs. The bleeding, however, had ceased. Still, urgent symptoms of the loss of blood continued, till the patient, notwithstanding every means that was used to keep her up, died in a convulsion, apparently, as the author thinks, caused by acute cerebral anæmia. No probable source of the bleeding could be found except a slight lesion of the left leg and large veins at the entrance into the vagina. But there was complete chronic adhesive pericarditis, and slight eccentric hypertrophy of the left ventricle. The author concludes with the following observations:—The loss of blood, however, as the relatively large blood contents of the chest and abdom-

inal viscera prove, was not so great as should of itself have proved fatal in an otherwise completely healthy person. It is more probable that a relatively small but sudden and speedy loss of blood so powerfully depressed the functional activity of the heart, greatly disturbed in its action by the complete adhesive pericarditis, that the arterial blood-pressure continually sank, and death occurred by cardiac paralysis, than that the anæmia had brought it about independently of the paralyzed medulla. The mode of death itself was an eclamptiform attack, which may be held as occasioned by the stoppage of the heart and the immediate intense cerebral anæmia. Such a case, which will only illustrate a fact well known to clinicists, namely, that severe loss of blood in certain cardiac diseases (adhesive pericarditis, valvular affections, fatty heart, etc.) may be rapidly fatal by cardiac paralysis, ought to give the hint to obstetricians to immediately examine the heart in case of bleedings connected with their line of practice, in order thereby to establish a prognosis, and to act with energy upon establishing the existence of such a cardiac affection, even when the bleedings are slight.

THE HEAT OF THE HEALTHY UTERUS DURING THE PAINS.—C. Hennig records a series of experiments on this subject (*Archiv für Gynäkologie*, B. xiv. s. 361). These were made by means of a thermometer constructed of special length and strength for the purpose. The bulb of the thermometer was covered with a steel sheath, and the stem of the instrument enveloped in gum-elastic, leaving an elongated slit bare for reading off the height of the column at each observation. Furthermore, the lower part of the instrument was bent at an angle of 40° , with the upper so as to be rendered more convenient for introduction and working. The following are the conclusions arrived at by C. Hennig as the result of numerous observations:—

1. During the active progress of labour there is free heat along the walls of the cavity of the uterus.
2. The heat exceeds the usual intra-uterine temperature, which, indeed, in the non-pregnant condition, is wont to be somewhat higher than that of the vagina, and in the upper sections of the uterus somewhat higher than in the lower of the woman's parts.
3. The addition to the uterine heat resulting from the pains is generally not demonstratable in the early pains and in feeble pains; there are women who, during an easy labour, develop no increase of heat perceptible by the present means of measuring it up to the escape of the presenting part of the child from the cervix uteri.
4. The quotients of heat appertaining to the pains have individual differences.
5. The highest increase of heat during a normal pain amounts to $0^{\circ}1$ Cent.
6. In the case of some persons, the heat of the uterus present in the absence of the pains gradually increases during the step-by-step increase of warmth due to the pains.
7. The increase due to the pains does not in all persons appear coincidently with the beginning of the pains and abruptly.
8. Excess of liquor amnii produces a sudden and con-

tinuously manifest increase during the pain, since the source of heat in a brief period renders many units in succession effective. 9. The surrounding parts, in the first place the vagina, and after it the rectum, radiate in the course of the more powerful pains the increasing uterine temperature in slight amounts. 10. Whilst the pains become more powerful and frequent, the general temperature of the body of the parturient woman also increases, according to measurements taken in the axilla. 11. A periodic decrease of the temperature of the axilla during any specially powerful pains I could not demonstrate.

ON THE PHYSIOLOGICAL THROMBOSIS OF THE UTERINE VESSELS DURING PREGNANCY.—Dr F. Patenko, of St Petersburg, s. 423 of above-mentioned journal, records the microscopic appearances found in three uteri. He fully substantiates the original observation of Friedländer, that there is gradual thrombosis in the placental area. He, however, differs from the views of Leopold in regard to their formation. The latter author believed they are produced through the agency of the giant cells of the decidua, which he describes as penetrating the walls of the vessels, and giving rise to a concentric deposit of fibrin inside the vessel, by which means its lumen is ultimately obliterated. Dr Patenko objects to this as being an exceedingly unlikely process, arguing that the intravascular pressure being almost constantly greater than the extravascular, renders this occurrence exceedingly improbable. He holds that a blood-coagulum first forms; that the condition of the surrounding tissues, which gives rise to the giant-cells in the decidual tissue, modifies the organization of the thrombus, and the changes of the endothelium of the vessels, so that the connective tissue into which the thrombus is slowly transformed is found to be largely traversed by giant-cells. According to this explanation, the giant-cells found in the organized blood-clot have not arisen directly from migration of giant-cells through the vascular walls from the decidua, but have been produced by the influence of the decidual tissue upon the endothelium of the vessels and the cellular elements of the connective tissue into which the blood-clot becomes transformed.

CATGUT AS A VEHICLE OF INFECTION.—In No. 12, 1879, *Centralblatt für Gynäkologie*, Professor Zweifel, of Erlangen, records a case in which infection resulted from the raising of the edges of an extremely small fistulous opening, which had remained after an operation for transverse obliteration of the vagina. In the case referred to the knife, needle, and hooks were carefully disinfected in a 5 per cent. solution of carbolic acid. The edges were brought together with catgutsutures. Septicæmia and death followed this operation, and the post-mortem examination clearly proved that the death was due to a recent infecting starting from the pelvis. The bottle of catgut from which the threads were used on this occasion was then examined, and found to contain bacteria. In other two specimens of catgut

examined by Zweifel a countless number of microscopic creatures were seen wriggling between the lamellæ of the catgut. Zweifel considers it as nearly certain that the catgut was the source of infection in the above case, and thinks it absolutely necessary that each bottle of catgut ought to be subjected to careful microscopical examination before being used. He points out, that if the catgut bottle is not securely corked, the carbolic acid gradually evaporates from the oil, more especially if the bottle is kept in a warm room. Zweifel is more inclined to explain the occasional appearance of putrid catgut in this manner, than to believe that it may have been produced from the intestines of putrid animals.

PILOCARPIN IN TWO CASES OF ECLAMPSIA.—In No. 13, 1879, *Centralblatt für Gynäkologie*, Dr Justus Schramm records two cases of eclampsia treated with pilocarpin, and formulates the following conclusions as the result of his experience:—1. The pilocarpin proved itself in Case I. completely inoperative, in so far as regards the induction of premature labour. 2. In both cases there was no pain-stimulating or pain-strengthening influence of the remedy to be perceived. 3. In Case I., after injection of pilocarpin, the secretion of saliva and perspiration did not occur at the time of the eclamptic attacks, which, according to Säger, would indicate the severity of the affection. Case II., on the other hand, showed extremely profuse salivation, hydrosis, and strikingly increased diuresis. 4. The special action of pilocarpin in causing remission of the severe spasmodic attacks in Case I., in which other more tried medicines were not employed, is especially to be noticed. Also in Case I., at first treated with bromide of potassium, the pilocarpin appeared the chief agent in subduing the eclampsia and the dropsy.

MALPOSITIONS OF THE URETERS.—An interesting paper on this subject is contributed to the *New York Medical Journal*, December 1879, by Dr W. H. Barker, of Boston. The starting-point in it is the record of a case of urinary fistula in a young lady, which was discovered by Dr Barker to be due to a malformation of the left ureter, which, instead of opening into the bladder, opened in the vulva, a little below and to the left of the urethra. Dr Barker successfully treated this case by making an opening into the bladder, dissecting out and cutting off a portion of the ureter, and then sewing it to the bladder wall. Finally, he closed up the vaginal opening. The operation was completely successful. The stitches connecting the bladder with the urethra were of cotton-thread (no other being at hand at the time), and were left to ulcerate their way into the bladder. The vaginal wound was brought together by silver stitches.

NEURASTHENIA AS A CAUSE OF DISEASE IN WOMEN forms the subject of the introductory paper of Dr Goodell at the annual meeting of the American Gynecological Society this year. In this paper

the author argues with much force (and, as we think, also wisdom) that many of the diseases which are referred to the womb as a cause are really due to general affections which operate so as to weaken the nervous system. From this view of their causation, Dr Goodell maintains that such patients should not be treated by local measures applied to the womb, which frequently do harm rather than good, but partly by moral treatment, and partly and chiefly by such means as subdue ovarian irritation and improve nutrition, while conserving and stimulating nervous energy. Three cases successfully treated are recorded in the paper, and others are referred to indirectly. Dr Goodell, in those cases, put the patients into a dark, quiet room, fed them on skimmed milk and eggs, gave large doses of iron, malt extract, and other analeptics, and applied massage and electricity. The results were most encouraging.

OVARIAN MENORRHAGIA is the subject of a paper by Dr Arthur Meadows, in the *British Medical Journal*, 12th July 1879, which points in the same direction as Dr Goodell's paper referred to, and indicates, we think, the rise of a more healthy, because less interfering, spirit in gynecological therapeutics than has been dominant for some years. Dr Meadows maintains that there is a considerable class of cases in which menorrhagia is present without appreciable uterine disease. In such cases careful examination will detect tenderness, and possibly, also, some swelling of one or both ovaries. There is also, he holds, sympathetic involvement of the larynx frequently present, such as loss of voice and other throat affections. Such cases never are improved when they are treated by the usual routine astringents. Dr Meadows recommends the employment of sedative neurotics and mild chalybeates. He administers bromide of potassium with or without bromide of iron. In one case he employed 30 gr. of the bromide of potassium and a teaspoonful of the bromide of iron thrice daily, using every night a vaginal pessary containing one grain of conia and one-twelfth of a grain of atropia. In three months a permanent cure was established in a very severe case. Dr Meadows considers that of all the anodynes we possess none can compare with conia as an anodyne to the generative organs.

MONTHLY REPORT OF THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Edinburgh School of Medicine, etc., etc.

JABORANDI IN NIGHT-SWEATS.—*Ed. Med. and Surg. Reporter*.—About one year ago, Dr Charles H. Weikel, then Resident Physician in the Philadelphia Hospital, told me that they had been using in that institution jaborandi for the purpose of stopping the night-sweats of phthisical patients, and almost invariably with success. Since then I have prescribed it with the same intention

in four cases, and Dr S. Mason M'Collin tells me that he has employed it in three of his cases. In all these cases, with the exception of one, the night-sweats ceased after the first dose almost totally. As mentioned, it had no effect in one of my cases; but here, I think, its employment came too late, as the individual died a few days later. The way I used it was the following:—

R Extracti jaborandi fluid. f. ℥ss.
Tinct. cardamomi.
Syrup. pruni Virginian, āā f. ʒij. M.

Sig.—One teaspoonful in half a wineglassful of water the first night, then half a teaspoonful every following night, until cessation of sweats.

It will rarely be necessary to give the medicine oftener than four consecutive nights. If after some weeks the sweats should return, which is frequently the case, one or two of the smaller doses have, in my cases, been sufficient to stop them again. If after repeated trials and a larger number of observations the fact should be established that jaborandi in small doses always has the effect of suppressing that which it produces when administered in larger quantities, and especially if it should prove, as it seems to do, to be specific against the night-sweats of phthisical patients, then we would have one remedy more to alleviate the suffering of those unfortunate beings who fall victims to the tubercular diathesis. The remedies we know so far to stop these night-sweats have all some kind of drawback. Sulphuric acid disturbs rapidly the digestion; the external application of tonic astringents is of no use; and atropia produces such a disagreeable dryness in the throat, and after a few doses frequently such an exhausting diarrhoea, besides its effects on the eyes, that we would have now in jaborandi a really very valuable addition to our stock of palliative remedies, besides its usefulness in many other diseases where a strong diaphoresis or increase of the salivary secretions is our object. What dose of the muriate of pilocarpin hypodermically might be necessary to stop these sweats I am not able to say, having found no occasion yet for using jaborandi in this form, but I should judge one thirty-second of a grain might answer the purpose.

There is another remedy which is often used in the Philadelphia Hospital, and which outside of that institution is very little employed, and almost considered obsolete, that is, the fluid extract of hamamelis. According to my experience with this drug, it is far superior to ergot, gallic acid, terebinthine, cupri sulphas, plumbi acetas, and all others recommended against hæmoptysis. The fault that it might have occasionally disappointed in its effect, lies in the dose and not in the medicine. In cases of hæmoptysis I give two teaspoonfuls of the fluid extract of hamamelis right away, and repeat the dose every half-hour till the severe bleeding stops,

and continue it later in the dose of one or half a teaspoonful three times daily, until all signs of the spitting of blood have disappeared. I have seen no remedy yet so certain in its effect as hamamelis, and I mention it here to induce others to try it. If hamamelis is used in the following way, patients like to take it:—

R Extract. hamamelis fluid. f. ʒiij.
 Tinct. radiceis aconiti.
 Acid. hydrocyanic. dilut., āā m̄xv.
 Extract. glycyrrhiz. fluid, f. ʒss.
 Syrup. limonis, f. ʒvij. M.

Sig.—One or two teaspoonfuls in water three times daily, or as directed.—*Medical and Surgical Reporter*, 17th May 1879.

PERISCOPE OF OPHTHALMOLOGY AND OTOTOLOGY.

By DR KIRK DUNCANSON, Surgeon to the Ear Dispensary, 6 Cambridge Street; Assistant-Surgeon, Eye Infirmary; Lecturer on Diseases of the Ear, Edinburgh School of Medicine.

MR S. H. BRACKETT, of St Johnsbury Academy, Vermont, writes to the *Scientific American*, claiming for Mr Edward Farrar, of Keene, N. H., the discovery of the principle of the telephone in 1851. In support of the claim, Mr Brackett gives the following extracts from Mr Farrar's correspondence of the time: "Each reed of a melodeon is furnished with a small metallic point, which, while the reed is at rest, approaches near to the surface of mercury in a very small cup underneath the reed, into which the point dips when set in motion. The reeds are connected with one pole of a battery, and the cups with the other. The current is broken with each vibration of the reed. At the remote end of the wire is a temporary magnet, with an armature fixed upon a spring in near proximity to the magnet, and which is affected as a reed at the other end of the line is set in motion. The effect is, that the armature vibrates with the reed set in motion, and, the pitch of a sound depending on the rapidity of vibration, it will be the same in the reed and armature. A tune on the instrument will therefore produce a tune on the armature. What may appear somewhat strange, several different tones may be heard when chords are struck upon the instrument. The object of my inquiry was this: if the current power could be varied by some slight variation of a vibrator to be affected by the atmosphere, as the tympanum of the ear is, the supposition is that the sounds of the voice might be reproduced by the means stated above." When it is remembered that Mr Farrar penned the above in May 1854, it is to be regretted, we agree with Mr Brackett, that he was turned aside from so interesting an inquiry at so critical a point.—*Nature*, 8th May 1879, page 40.

ROYAL SOCIETY, EDINBURGH, 21st April.—On the anatomy of

the northern Beluga (*B. catodon*), compared with that of other whales, by Morrison Watson, M.D., and Alfred H. Young, M.B., of the Owens College, Manchester. This paper contains a complete account of the visceral anatomy of Beluga. In connexion with the larynx, the existence of pouches similar to those previously described by Murie in Risso's Grampus is pointed out. These pouches undoubtedly correspond to the large laryngeal air-sac of the whalebone whales; both are regarded by the authors as homologous with the ventricles of Morgagni of other mammals, and not, as considered by previous anatomists, with the well-marked air-sacs met with in several species of quadrumana.—*Nature*, 8th May 1879.

ON THE ELECTRICAL INSCRIPTION OF SPEECH, by M. Boudet de Paris.—A very sensitive microphonic transmitter is used, in which the carbons are simply held in contact by a small piece of paper folded in the form of V. The receiving telephone has diaphragm and cover removed, a spring fixed at one end on the wood, and at the other end (to which is added a small piece of soft iron)—resting on the magnet; a light bamboo style with whalebone extremity is attached to the spring, and gives instructive traces on decalcomanic paper.

SIREN WITH ELECTRO-MAGNETIC REGULATOR, by M. Bourbouze.—An improvement on an apparatus, described, 18th December 1876, with a pinion and double rack, he can simultaneously bring near both electro-magnets to the copper disk, or remove them, obtaining any note in the siren.—*Academy of Sciences*, Paris, 28th April.

DR SWAN M. BURNETT, of Washington, has recently made some examinations for the purpose of ascertaining whether the negro in the United States is affected with colour-blindness to the same degree as the white race. He has examined 3050 coloured children, from six to eighteen years of age, in the public schools of the district of Columbia, of which 1359 were males, and 1691 females. Of these, twenty-two boys were colour-blind (or 1·6 per cent.) and two girls (or 0·11 per cent.) The percentage of colour-blindness among the whites in an aggregate of about 40,000 examinations is 3 per cent. for males, and 0·26 for females. The negro appears, therefore, to be less liable to this defect than the white race. The examinations were made in strict accordance with the plan proposed by Professor Holmgren, of Upsala, Sweden, and used so extensively in making similar examinations in Europe.

ON THE EFFECTS OF INHALATION OF SPIRIT OF TURPENTINE.—Observations were made both on workmen and animals. The disorders produced in the former are headache, giddiness, irritability, pricking, and tearfulness of the eyes, and weakness of sight, irritations of pharynx and larynx, vomiting, etc. Through habit,

men get to bear the vapours longer. The troubles are more intense and constant with spirits of turpentine from Hungary and America, than with those of French origin. Animals which died from the acute poisoning in confined space generally showed congestion and free drops of the condensed spirit in the blood.—*M. Poincaré*.

REGENERATION OF NERVES OF THE ANTERIOR EPITHELIUM OF THE CORNEA, AND THEORY OF CONTINUOUS DEVELOPMENT OF THE NERVES OF THE NERVOUS SYSTEM.—The regeneration of cells of the anterior corneal epithelium precedes that of the nerves, showing that the reproduction and nutrition of the epithelial covering of the cornea are independent of the nervous system. The last nervous ramifications tend by their nature to grow continually at the periphery (*M. Ranvier, Academy of Sciences, Paris, 12th May 1879*).—*Nature, 22d May 1879*.

ON THE TRANSPARENCE OF THE MEDIA OF THE EYE FOR ULTRA-VIOLET RAYS.—*M. Soret* operated with the eyes of oxen, calves, and sheep, using his spectroscope with fluorescent eye-piece. It is shown that the absorption by the whole of the media must render impossible the perception of rays, whose refrangibility exceeds that of the extreme radiation of the solar spectrum, or the line U. The absorbent properties of the vitreous and aqueous humours are attributed to presence of albuminoid substances. The limit of transparency of the two humours is indicated by curves.—*M. Soret, Academy of Sciences, Paris, 19th May 1879*.

INDEPENDENCE OF CHANGES OF DIAMETER OF THE PUPIL, AND OF VARIATIONS OF THE CAROTIDIAN CIRCULATION.—The iris may be dilated or contracted independently of modifications of the circulation (*M. Francois Franck, Academy of Sciences, Paris, 19th May 1879*).—*Nature, 29th May 1879*.

HERR KAYSER has arrived at the conclusion, that the velocity of propagation of sound-waves is independent of the intensity of the tone. His final method (two others, with use of Kundt's dust-figures, having been rejected) was to note the phases of vibration of a piece of mica at the top of a vertical glass-tube used for resonance to a tuning-fork above it, set vibrating with different intensities by electric means. Water could be admitted laterally at the bottom of the tube, so as to obtain the maximum resonance. As the water-stopper is displaced, the same figure of vibration always returns whenever the displacement reaches half a wave-length. Herr Kayser finds the velocity of sound in free space, 332·5 m., calculated by Kirchhoff's formula, from velocity in tubes, and making therein $\gamma = 0.0235$. (The case of explosion-waves is excluded from consideration, these being quite distinct in kind from sound-waves).—*Annalen der Physik und Chemie, No. 4*.

BLINDNESS FOLLOWING DENTAL DISEASE.—Sirletti (*Le Movement Med. Phil. Med. Times*) reports the case of an old man suddenly attacked with hemeralopia, without any previous enfeeblement of vision. On examination, it was found that the patient had suffered severe pain in the upper canines, from one of which the crown was gone. A fistulous cavity, with intra and extra alveolar periostitis, was found in the root of each canine. These teeth having been extracted, the patient began to be able to distinguish light from darkness almost immediately, and by the end of six days his sight was completely restored.—*The British Medical Journal*, 22d March 1879, pp. 421 and 455.

THE HISTORIC EVOLUTION OF THE PERCEPTION OF COLOURS.—In a memoir presented to the Academy of Sciences and Literature of Lyons, by Dr Henry H. Dor, a well-known oculist, contesting the view held by Mr Gladstone and by Geiger and Magnus of Boston, that our ancestors were colour-blind,—a view deduced from their writings and from the different names which they have given to colours,—Dr Dor endeavours to demonstrate that now, as in the time of Homer, poets insist too little upon the indications of the colours, but much more upon their luminous intensity. Moreover, M. Dor says that persons who do not possess any knowledge of physics find much difficulty in distinguishing the colours of the rainbow, and only see in it three or four colours, in place of the seven classical colours of its composition. Further, it results even from the very study of the Assyrian and Egyptian monuments, that those nations had not only perceived, but imitated, the greater part of the colours of which we are at present cognisant.—*Brit. Med. Jour.*, 26th April 1879, p. 641.

GENEVA SOCIETY OF PHYSICS AND NATURAL HISTORY, 21st November 1878.—Prof. Soret communicated the results of his researches on absorption spectra by means of the eye, especially with respect to ultra-violet radiations. He operated on the eyes of oxen and calves, and he found that the ultra-violet radiations were transmitted as far as the S. line. The aqueous humour allows them to pass as far as V. The vitreous substance has a transparency much greater than the aqueous humour.—*Nature*, 3d April 1879, p. 524.

LARGE LEUKÆMIC TUMOURS OF THE EYELIDS AND BILATERAL EXOPHTHALMOS.—Dr Lebert describes in the *Archiv für Ophthalmologie*, vol. xxiv., the case of a man aged 47, who was admitted into the Ophthalmic Clinic at Göttingen in April 1877. The eyelids on both sides were greatly thickened, and enlarged in all their diameters; the lower lids hung like bags on the cheek. Under the skin a firm, somewhat elastic mass was felt. Both eyeballs were so prominent that the apex of the cornea lay a *centimètre* more forward than the root of the nose. The proliferation extended to the conjunctiva and the subconjunctival tissue. At the lateral parts of the

forehead and in the region of the temporal muscles, there was a somewhat extensive superficial elevation. The nostrils were free, and the cavity of the mouth showed nothing abnormal beyond slight enlargement of the uvula. The ophthalmoscope revealed hæmorrhagic retinitis on both sides; vision was scarcely disturbed. Nothing abnormal was found in the heart. The urine contained a rather large quantity of albumen, and a considerable number of large granular cylinders. The spleen, liver, and blood presented indications of leukæmia. The leukæmic tumours in the eyelids and other parts continued to increase, the patient's strength gradually failed, and he died about fourteen months after he had first observed the swelling of the eyelids.—*The British Medical Journal*, 5th April 1879, p. 514.

GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION, SESSION 1879.—*Wednesday, 26th March.—Ophthalmic Surgery.*—Mr Teale presented a memorial signed by twenty-two of the leading ophthalmic surgeons in London, in which they drew attention to the advisability of making it compulsory upon all medical students to attend a three months' course of practical ophthalmology either at the special eye department of a general hospital or at a special ophthalmic hospital, as well as a course of twenty lectures on ophthalmology at the least, and to the importance of making ophthalmology form a distinct subject of examination at the pass examination for surgical diploma, or at the examination of a conjoint board. On the motion of Mr Teale, seconded by the Rev. Dr Haughton, it was resolved:—"That the petition of ophthalmic surgeons be received and entered on the minutes, and that a copy of the petition be transmitted to the licensing bodies named in schedule A to the Medical Act for observations, and report thereon to the Medical Council."—*The British Medical Journal*, 5th April 1879.

A PECULIAR PERIPHERAL OPACITY OF THE DRUM MEMBRANE AND ITS SIGNIFICANCE.—In his work on diseases of the ear, Gruber has called attention to the fact that opacities of the drum membrane are sometimes caused by adhesion of the surfaces of a fold of the membrane, as occurs occasionally when that structure has become relaxed from any cause. In an article on the same subject, published in 1871, he says that partial or total relaxation of the drum membrane is the common cause of the formation of these folds, which may occur single, or in numbers in one and the same membrane. He now describes a special form of these folds which occurs on the posterior upper margin of the membrane, close to the edge of the meatus. When this fold projects into the meatus with its free edge, a yellowish colour is given quite distinct from the rest of the membrane; when, however, its free edge projects into the tympanum, a corresponding depression is visible externally. Such folds, he thinks, occur not unfrequently, and when the free edge

projects into the meatus, allowing the mucous surfaces to lie in contact, adhesions are formed between these surfaces, and the result is an opacity. Where the fold, however, projects inward, he has never seen the surfaces unite, as would be thought to be the case, from the fact that the external surface of the membrane is covered with epidermis. On an opacity thus formed not unfrequently a lineal prominence is seen, which is the free edge of the previous fold of membrane. The influence of such an opacity on the hearing is very variable; sometimes by the adhesion of the surfaces of the original fold the tension of the drum-membrane is brought more nearly to the normal, and the formation of the opacity actually produces an improvement in the hearing over what it was when the fold existed. In the majority of cases, however, the longer the opacity has existed the worse is the hearing, from the fact that it produces a hyper-tension of the membrane, with resulting abnormalities in the position and articulation of the ossicles. In treatment Gruber recommends first a trial of the air-douche, which, however, should not be used for any length of time; if this is unsuccessful, multiple perforation of the opacity is advised, with an after-treatment which shall tend to produce a development of connective tissue between the edges of the wound, thus producing relaxation of the membrane (Gruber, *Monatschrift für Ohrenheilkunde*, Sept. 1878).—*American Journal of Otology*, vol. i. No. 2, April 1879.

At Marchmount, near Dunse, 500 feet above the level of the sea, the lowest temperature was 3 degrees recorded on 27th January, and the mean temperature for two months was low. A *Eucalyptus globulus*, planted out in a sheltered corner, was killed. At Castle Kennedy, the seat of the Earl of Stair, the thermometer registered 18 degrees of frost on several occasions in December, but in January not more than 15 degrees were recorded. A number of different species of the eucalyptus, planted a few years ago, were either killed outright or so seriously injured as to be useless. There is one exception, the *Eucalyptus amygdaloidea* (*amygdalina*?), which has braved the storms of twenty winters, and never received the slightest check, though growing in an exposed situation in a shrubbery, where it has shot up, and stands above the evergreens. This is likely, says Mr Fowler, to be the only species of eucalyptus which will prove sufficiently hardy to withstand the climate of Scotland, and that, too, only in favoured situations. The influence of the sea in ameliorating even severe frosts is illustrated in the condition of vegetation in the island of Arran. There three species of the Australian gum-tree, including the blue gum, are almost as green and fresh as if there had been no frost.—*Scotsman*, Friday, 14th March 1879.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., F.R.C.P., Lecturer on Diseases of the Skin,
Edinburgh School of Medicine.

LUPUS SYPHILITICUS AND LUPUS VULGARIS.—As bearing on the subject of Mr Lucas's paper, of which an abstract appeared in the June number of this Journal, we quote the following from a lecture on the difficulties of diagnosis in venereal diseases, by Professor Zeissl of Vienna. He tabulates the points of difference between the so-called lupus syphiliticus or syphilitic gummata and ordinary lupus as follows:—

Lupus Syphiliticus.

1. Seat in the tissue of the cutis, or the subcutaneous cellular tissue.
2. Gummata are painful to the touch.
3. Generally accompanied by ozæna syphilitica.
4. Generally leave strongly marked and deep scars.
5. In lupus syphiliticus hereditarius the velum is generally ulcerated.

Lupus Vulgaris.

1. Lively reaction in the neighbourhood of the tubercles or ulceration, frequently erysipelatous swelling of the surrounding tissues.
2. Tubercles and ulcers are nearly painless.
3. The bones of the nose are generally unaffected.
4. Lupus generally leaves contracted scars.
5. There is generally no ulceration of the velum molle.

This last distinctive point is an important one, as the discrimination between inherited syphilitic ulcerations of the face and ordinary lupus is by no means easy in some cases.—*Allg. Wiener Mediz. Zeitung*, 1878, Nos. 19, 20, 21; and *Boston Med. and Surg. Journal*, 12th December 1878.

ALOPECIA AREATA, CANITIES, AND LEUCODERMA, IN THE SAME SUBJECT.—Dr Bulkley (*Philadelphia Medical Times*, 4th January 1879) records an instance of the simultaneous co-existence of these three affections in a patient thirty years of age. The alopecia occurred on the right temple, and from the patch ran a streak of clearly defined and localized grayness of the hair. The leucoderma was most marked on the backs of the hands, but existed also on other parts of the body. All three are of neurotic origin, and one cause of alopecia areata is excessive smoking, according to Dr Bulkley.

Dr McCall Anderson has remarked the same relationship between these three cutaneous diseases. In the *Medical Press and Circular*, 19th February 1879, he relates the case of a girl aged ten, who became affected with extensive alopecia areata. When six months afterwards these patches were again thickly covered

with hair, this was perfectly white, and about the same time round and oval patches of leucoderma made their appearance on the shoulders and back. In the same paper he also relates the case of a gentleman aged twenty-five, in whom alopecia areata and leucoderma co-existed, expresses his opinion that a relationship exists between them and Addison's disease, and that all three are due to a perversion of the functions of the sympathetic nerve.

A RARE FORM OF SYPHILITIC ERUPTION FOLLOWING A CHANCRE OF THE TONSIL.—The eruption here reported by Hardy was polymorphous (vesicular, pustular, erythematous, and papular), somewhat resembling variola in certain places. The most interesting portion of the article is a section near the end, in which Hardy states that about two years previously a specialist in ear disease had inoculated a number of people by passing a soiled Eustachian catheter upon them. The number of victims, Hardy says, was estimated at thirty or forty, and he (Hardy) had treated five individuals who had acquired their syphilis in this way.—*Gaz. des Hôp.*, Sep. 1878, and *Archives of Dermatology*, Jan. 1879.

TREATMENT OF PHTHEIRIASIS.—In a clinical lecture on animal parasitic skin diseases, Dr Bulkley makes some excellent practical remarks on the modes of getting most easily rid of the various forms of lice which infest man. The presence of *pediculus corporis* can be determined by the lesion produced by the insect itself, for the knowledge of which we are indebted to Dr Tilbury Fox, whose loss in the midst of his usefulness we all lament so much. The louse does not bite, but protrudes its proboscis into an open follicle, and sucks blood from the bloodvessels at its bottom. When withdrawn a minute drop of blood wells up into the distended follicle, clots, and gives rise to a very tiny red spot, quite distinct from the lesion of any other skin disease. This when found is pathognomonic. Unless the linen has been recently changed, nits—small, white, glistening particles—can be seen on it. These or the lesions, either primary or secondary, are to be looked for on the shoulders or about the waist. To cure, the clothes are to be boiled or baked, and the following wash, the ingredients being well rubbed up together, applied to the skin:—

R	Acid carbolic,	3ij.	
	Potassæ causticæ,	3i.	
	Aquæ,	3iv.	M.

For *pediculus capitis* there is one remedy which is absolutely infallible, and that is kerosene oil. The head should be saturated with kerosene, wrapped up for four or five hours, again soaked with kerosene, and left till next morning, when more oil is to be applied. At the end of twenty-four hours the head is to be thoroughly washed, and all the trouble is over, the eggs as well as the animals are destroyed, and the raw places left heal rapidly under zinc ointment.

Kerosene will also cure *pediculus pubis*, but a strong white precipitate ointment is preferable. The insect here adheres so closely to the hairs at their very exit from the skin that it is apt to escape detection. Such cases are sometimes mistaken for eczema, and treatment fails accordingly. (In one case with which we are acquainted a nobleman took 50 bottles of Vichy water for a supposed gouty eczema, and was cured by a single application of a mercurial ointment. — W. A. J.).—*Boston Medical and Surgical Journal*, 16th Jan. 1879.

SYMMETRICAL GANGRENE OF THE EXTREMITIES.—Dr Collins Warren relates a case of this curious affection first accurately described by M. Raynaud. The patient, a female, was treated at the Massachusetts Hospital. She was 25, a weaver, and there was no history of syphilis, but some dulness and râles at the left apex. The pulps of all the fingers and toes were of a semi-transparent purple, the centres of some of which were gangrenous. Dry, black eschars eventually separated from some, others recovered without sloughing. She was discharged in good health after a course of iron, with good food and resin cerate to the parts. The disease is a variety of dry gangrene, in which there are no anatomical lesions of the bloodvessels, with bilateral symmetry. It begins by the occurrence, usually in women, of "dead fingers," a pallor or coldness of one or more fingers. The reaction which follows is frequently painful. A more advanced condition is known as "local asphyxia," in which the pallor is followed by a cyanotic colour of greater or less intensity, with continuous pain. The fingers may become nearly black with formation of blisters, gangrene, and eventually cicatrization follows, leaving the finger tips as if pinched in a vice. In the great majority of cases it occurs between the ages of eighteen and thirty. The prognosis is favourable, but it may settle down into a chronic condition. The affection is one originating in the vasomotor system; there is spasm of the bloodvessels, at first temporary, latterly becoming more permanent. Besides a full account of the pathogeny of the disease, Dr Warren includes in this interesting paper a *résumé* of a number of cases described by various authors.—*Boston Medical and Surgical Journal*, 15th January 1879.

DERMATOLOGICAL OBSERVATIONS BY M. LITTEN. — I. *An anomalous and hitherto unnoticed Development of Pigment* (pigmentary neurosis) *following Enteric Fever.*—In a robust patient, aged 25, during convalescence from a simple uncomplicated typhoid, symptoms of floating kidney showed themselves, and simultaneously there appeared on various regions of the body a great number of dark-brown maculæ, the size of hemp seeds. During the succeeding fourteen days, without any interference with the general condition, numerous fresh pigmentations came out, and severe crural neuralgia was experienced. After a month, during

which the maculæ had not become more numerous, and complete recovery had taken place, the maculæ, though pale, were still present in the same number. Litten expressed the opinion that, notwithstanding absence of symmetry, there was here a nervous sequela of typhoid, due to affection of the sympathetic. II. *On the appearance of Urticaria in connexion with Irritation of the Intestinal Mucous Membrane and the large Gall-ducts.*—In a case of hepatic colic, with subsequent jaundice, in two attacks during the transit of the gall-stone through the ductus communis choledochus, an outbreak of urticaria occurred. Fever and vomiting were present at the same time. (Tilbury Fox has drawn attention to the fact that a loaded gall-bladder is a not unfrequent exciting cause of acute urticaria.) In a second case there coincided in a marked manner the discharge of taenia proglottides with the outbreak of urticaria. Half a year elapsed between two similar attacks. The tape-worm was acquired through eating much raw meat during an attack of catarrhal jaundice. III. *Papular Exanthem as Sequela of acute Chloral Poisoning.*—A girl, who had swallowed about 50 grammes (nearly 2 ounces) of chloral hydrate in an attempt to commit suicide, exhibited after twenty-four hours, besides other symptoms of intoxication, an eruption of numerous papules, each larger than a grain of linseed, and of a yellow colour. These itched severely and were scattered over the whole body, especially on the adjacent margins of the fingers, on the face and breast. The temperature was normal. The exanthem continued some weeks. Litten mentions a second case, in which, in like manner, an extremely itchy papular exanthem diffused over the entire surface, broke out as an acute symptom of poisoning, after a very large dose of chloral. — *Centralblatt j. d. Medicinischen Wissenschaften*, 7th June 1879.

Part Fifth.

MEDICAL NEWS.

WE are informed that an examination of candidates for commissions in the British Medical Service will be held at the University of London, Burlington Gardens, in August, the date of which will be announced hereafter.

CORRESPONDENCE.

To the Editor of the Edinburgh Medical Journal.

42 NORTHUMBERLAND STREET, EDINBURGH,
14th July 1879.

Dear Sir,—I have read the review in the April number of the *Journal of Dr Bell's Observations on Diphtheria and Erysipelas* with

no less interest than that which preceded it on Dr Semple's *Monograph on Diphtheria*, in which he, like Dr Bell, bears testimony to the value of the tincture of the perchloride of iron in that disease. During over eight years' practice in the country I happened to see more cases of diphtheria than either before or since my stay in Edinburgh, and am convinced that this medicine is one of great value as a curative agent. Its usefulness in diphtheria was one of the first therapeutic hints I got from my late father, who was a pupil and apprentice of the late James Begbie, and who, following his practice, always used the perchloride in this disease.

My object, however, in writing to you is to mention the method experience has led me to adopt in prescribing the drug, and to state my belief in its local antiseptic action on the throat in addition to its well-known constitutional effects, when given in proper doses repeated with sufficient frequency.

Believing as I do in a combination of local and constitutional treatment in diphtheria, I was formerly in the habit of applying frequently hydrochloric or carbolic acid or other strong solution to the throat; but of late I have been content with a single, or much less frequent, recourse to these strong local applications, or even with their entire abandonment, trusting solely to the tincture of the perchloride of iron, administered in very frequent doses—10 to 15 minims in 3ss. of water every hour, or even oftener. When taken thus, I believe the drug exercises sufficient direct action on the throat during deglutition to enable us to dispense entirely, in the great majority of cases, with any other local application whatsoever. If this be so, it is a manifest advantage both to patient and medical attendant, more especially in the case of children, in whom at all times it is difficult to apply remedies satisfactorily to the throat.—I am, yours,
&c.,

JAS. CARMICHAEL.

PUBLICATIONS RECEIVED.

- Dr BOURNEVILLE, — *L'Année Médicale*, 1878.
E. Plon et Cie., Paris, 1879.
- S. MESSENGER BRADLEY, F.R.C.S., — *Injuries and Diseases of the Lymphatic System*. J. & A. Churchill, London, 1879.
- W. L'RAITHWAITE, M.D., and JAMES BRAITHWAITE, M.D., — *Retrospect of Medicine*. Vol. LXXIX. Simpkin, Marshall, & Co., London, 1879.
- Dr C. A. EWALD, — *Die Lehre von der Verdauung*. August Hirschwald, Berlin, 1879.
- Guy's Hospital Reports. Vol. XXIV. J. & A. Churchill, London, 1879.
- CHRISTOPHER HEATH, F.R.C.S., — *Students' Guide to Surgical Diagnosis*. J. & A. Churchill, London, 1879.
- E. KLEIN, M.D., and E. NOBLE SMITH, L.R.C.P., — *Atlas of Histology*. Part V. Smith, Elder, & Co., London, 1879.
- J. P. McNEILL, M.D., T.C.D., — *Treatise on Hydrophobia*. Henry Renshaw, London, 1879.
- Tenth Annual Report of the State Board of Health of Massachusetts.
- REGINALD E. THOMSON, M.D., — *Physical Examination of the Chest in Health and Disease*. Henry Renshaw, London, 1879.
- J. R. WOLFE, M.D., — *Colour Sight and Colour Blindness*. J. & A. Churchill, London, 1879.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Address to the Medical Graduates in the University of Edinburgh, 1st August 1879.* By THOMAS GRAINGER STEWART, M.D., Professor of the Practice of Physic.

GENTLEMEN,—In consequence of the much regretted illness of Sir Wyville Thomson, it falls to me to address you in the name of the Medical Faculty before you finally leave our halls.

I congratulate those of you who have passed through the years of probation as Bachelors, and have now been advanced to the full dignity of the degree of Doctor of Medicine. That degree is the highest which, in our profession, a University is empowered to confer, and I pray you to remember the trust which is this day placed in your hands and the responsibilities which it implies. I congratulate those to whom medals and other honours have been awarded. Many of the theses have been of great merit, and none have been sustained unless the Faculty have been satisfied of their solid value.

I congratulate those who have this day attained to the degree of Bachelor of Medicine, upon the mere fact of having passed successfully the very formidable series of examination ordeals, upon having scaled a chain of mountains which has doubtless loomed largely in your eyes for years past, and especially during the recent months, so largely, perhaps, that it may quite have shut out from view the other heights which lie beyond. I congratulate you upon the fact that the Chancellor's touch has made you legally qualified practitioners, licensed to practise your profession in any part of Her Majesty's dominions; and I congratulate you upon the fact that you are University men, that you have not obtained to-day a mere license, but that you have received as students the impress of that higher culture, and as graduates the higher status which a University of necessity gives. And, last of all, I congratulate you that you are graduates of the University of Edinburgh, which, I take leave to say, is surpassed by none of the seats of medical learning.

It may not in present circumstances be inopportune for me to ask you to look for a short time this morning at some of the grounds of the claim which, as alumni of the University of Edinburgh, we advance for our Alma Mater.

It is clear that no medical school, in the British islands at least, enjoys so great and old a renown. When we look back along the line of great men who established its reputation we cannot but feel a just emotion of pride. Besides men of the highest efficiency, such as Sinclair, and Plummer, and John Rutherford, and John Gregory, and Sutherland, and Alston, and Hope, and Daniel Rutherford, who were there during the last century in Europe more famous in Anatomy than the first and second Monros? Who contributed more to Chemistry than Black? Who were more eminent as physiologists and scientific practitioners than Whytt and Porterfield? Who was more honoured as a physician throughout the world than Cullen? In their times men began to flock to Edinburgh not only from all parts of Scotland, but from England, from Ireland, and from what were then spoken of as the plantations.

During the first half of the present century the professors were not less illustrious. There were such men as Hope in Chemistry, Jameson in Natural History, Graham in Botany, John Thomson in Pathology, Duncan in Materia Medica, Alison and Allan Thomson in Physiology, Hamilton in Obstetrics, Sir Charles Bell in Surgery, and James Gregory and Alison in the Practice of Physic. Were not some of these men fitted to lend additional lustre to the already brilliant university? Sir Charles Bell was appointed to his chair somewhat late in life, but with what a splendid record did he come. He had done fine work even when a student, and when as a young practitioner he was struggling for a footing in the Edinburgh Infirmary, and in London he achieved the discoveries as to the functions of nerves which are justly ranked with those of the immortal Harvey on the circulation. And Alison, with what affection and reverence do men still speak of his wide knowledge and experience, his profound sagacity, his largeness of heart, and his generosity. Edinburgh was rich in great men in his day, but there were few more honoured, and none more loved than he.

I wish I could convey to you an adequate impression of the brilliant group of men who were our professors one and twenty years ago when I sat as you sit to-day. Were it not that Sir Robert Christison is happily still among us, I should have tried to tell you something of the splendid services which he rendered to the University during a tenure of office extending over more than half a century; and with no less pleasure should I have sought to pay a tribute of affectionate regard to Professor Balfour, who for five and thirty years laboured with equal devotion and success in his own department, and for the general good of the school; to Professor Allman, also, whose observations have won for him a permanent place in his department, and who during my student

days succeeded to the chair of that ideal naturalist Edward Forbes. But all the rest have passed away, and of them I may speak.

You first saw Syme perhaps at his lecture. You were struck with the calm self-possession, the quiet self-reliance of the man. The lucidity of his few-worded statements, the rapidity of his diagnosis, the promptitude of his treatment, the perfect assurance as to the result, begat in you a confidence from the very first. Some day, perhaps, you saw him in a great emergency devise and carry out a procedure which saved a life, amid difficulties which you felt would have paralyzed almost any one else. As thus you watched the great surgeon you began to feel the helpfulness of his principles, how they guided you in clearing up a case, how they found applications in every direction, whilst every day you marvelled at the wealth of his experience. Then perhaps you came into closer personal contact with him, and found him manly, truthful, and straightforward, not by any means free from prejudices, full of appreciation of good work, and always ready to receive new ideas, at least when put forth by those in whom he believed. You found him the stanchest of friends, standing by you most steadfastly when you were right, and by no means turning his back upon you if you were wrong. You found the finest minds delighting to call him the master. You found that multitudes listened to him as to an oracle, but an oracle which laid down principles easy enough to understand, and not difficult to apply. And then, probably, by the time that you had taken your degree and left the University, you came more fully to see the greatness of his books, which grew less in successive editions, and in their unity were like organic things.

When you first saw Sir James Simpson, perhaps in his lecture-room, you were struck with the massive and magnificent head, the keen sparkling eye, the whole figure, although so bulky, full of energy and character. You found his lecture so clear and vivid, illustrated in every possible way, and not least by experiences and anecdotes full of meaning and full of fun. You found that the driest details and statistical statements were made interesting, and each successive day as you attended the course you became more impressed with the skill and genius of the lecturer. You came to know him personally, perhaps, at one of his breakfast parties. You got into his library overflowing with books and instruments of all kinds, with people waiting from all parts of the world. You found round his table a miscellaneous group of practitioners, students, and young graduates, of professors, literati, clergymen, antiquaries, artists, ladies, and you found him the life and soul of the party, pouring out in all directions the most interesting experiences and stories, and drawing from each one at table whatever he knew that was most worth hearing, answering notes and verbal messages, and always full of good humour and sympathy. You came to read the long array of papers which he had published, many of them

of the greatest value, and you felt that the world was right when it esteemed the Edinburgh Professor of Obstetrics one of its foremost men.

Get a group of old Edinburgh men together, and you will find that few of their professors will be more talked of than John Hughes Bennett. His great and outstanding gifts were the faculty of devising methods of teaching, and the vivid presentation of facts and theories. It did not follow that you agreed with what he said, but you could not help understanding him, and your attention never for a moment flagged. He had thoroughly grasped the great idea, that if you wish to make men understand a thing you must let them see it, examine it, and describe it for themselves. And this idea he applied in all his teaching. At his clinical work he was in his glory. With his great circle of students around him he opened up the case. Methodical, precise, handling severely the student who failed to do his work, enjoying keenly a tournament of words with any one who might be bold enough to enter the lists, respecting and valuing the man who could hold his own with him, he kept the bedside discussions lively, and made them so clear that the dullest student could scarcely fail to comprehend the points at issue. You got to know him personally in his family circle, and found him as genial as he had been brusque outside. The result was that many of us were led to regard him not only as an esteemed professor, but as a valued friend.

But among them all there was none other who called forth such deep and enthusiastic regard as John Goodsir. Who among the students of those days does not remember how he used to come into the class-room, with his ataxic gait, bringing down his heels with heavy thump upon the floor, and with difficulty finding his seat and getting himself in order to begin, the tall, gaunt form, strong, and yet so irregular and unsteady in its movements, the powerful face, the profound eye, indicating the gathering together of the mighty mental powers preparatory to speaking? Then came the opening general statement, elaborated and carefully expressed, followed by the series of shorter sentences, revealing the wealth of thought and observation embodied in what you had heard. Anatomy, which is apt to repel the student in consequence of the multiplicity of its details, came forth a glorious science when expounded by Goodsir. You perhaps heard him with a burst of enthusiasm maintain the independence of the immaterial part of man's nature; you heard him descant upon homologies; you heard him lay down the general facts of structure and development; you heard him expound his epoch-making cell doctrine; you perhaps heard him glowingly dilate upon what he used to call the dignity of man. Every day you felt that you were receiving the conclusions deduced by the profound sagacity of a master mind from the most extensive and laborious original investigations. Sir James Mackintosh said of Dugald Stewart that he breathed the love of virtue into whole generations of pupils. With equal truth

it may be said of Goodsir, that into many generations he breathed the enthusiastic love of science.

While I have selected these great men for special mention, there is no want of kindly and grateful recollection of those who were their colleagues, of Traill with his encyclopædic knowledge, of Henderson with his keen dialectic subtlety, of the thoughtful Gregory, of Laycock, a paragon of ingenuity and a master of subtle observation, and, least of all, of Miller, who supplied to the students much of what they afterwards found most useful in practice, whose whole heart was set upon serving the highest ends, and who afforded to us the most outstanding type of the genial, manly, Christian gentleman.

But besides those who, as professors, lent lustre to the University, there were many who, as extramural lecturers and in other ways, contributed to the establishment and maintenance of its fame,—anatomists like Barclay and the much-abused Knox, physiologists and pathologists like Fletcher and John Reid, and that Allen of whom Lord Cockburn speaks as the most brilliant lecturer of his time, chemists like George Wilson, surgeons like Liston and Sir William Ferguson, who reaped in London what they had sown here; John Bell, the elder brother of Sir Charles, Benjamin Bell, and Argyll Robertson, and Richard Mackenzie, some of whom have representatives among the most efficient of our teachers in the present day; physicians like Mackintosh and the erudite Craigie, and like the great Abercrombie, whose faithful portraiture of disease are still constantly referred to.

But, Gentlemen, the renown of the School is due as much to the fame of its graduates as to the eminence of its teachers. And there is no lack of such fame. When a well-read physician thinks of the literature of Fevers, do not the names of Tweedie, and Christison, and Graves, and Murchison at once occur to him—and all of these were Edinburgh graduates, or at least students. If he turns to diseases of the alimentary system he remembers Prout and Abercromby and Murchison, all of whom studied, in part at least, in Edinburgh. When he turns to diseases of the blood he thinks of Hodgkin, and Addison, and Bennett, all Edinburgh graduates. When he turns to the diseases of the circulatory organs he thinks of Hope, and Stokes, and Walsh, and Corrigan, and Gairdner, and all of them were Edinburgh graduates. When he turns to diseases of the lungs he remembers Sir James Clark and Williams, Walsh, Scott Alison, and Bennett, and all of them were Edinburgh men. When he turns to diseases of the skin he remembers the great masters, Willan and Bateman, both Edinburgh graduates. When he turns to diseases of the kidneys the great names of Richard Bright and Christison, and those of Basham and Gregory, occur to him. When he turns to diseases of the nervous system he thinks of Whytt and Abercromby, Sir Charles Bell, of Marshall Hall, of John Reid, of Conolly, and all of them were Edinburgh students.

But to take it in another way, if you were to ask your friends in Dublin who were the physicians of whom they were most proud, you would certainly hear of Stokes, and Corrigan, and Neligan, Edinburgh men. If you ask in London, you would hear—among the illustrious array of famous names—of Copland, and Hodgkin, and Bright, and Addison, of Marshall Hall and Williams, of Eliotson, of Sharpey, of Sir Gilbert Blane, of Sir Henry Holland, of Sir Charles Locock, of Sir John Forbes, of Sir James Clark, of Carpenter, of Gooch, of Fothergill, of Rigby, of Robert Ferguson, of Tweedie; and if they came to speak of men holding the highest offices and the foremost positions to-day, they would name many an Edinburgh man.

Look down the catalogue of Edinburgh students, which is most easily accessible, the list of members of the Royal Medical Society, and you will be surprised to learn how many of the great men of the profession have been students in our School.

If one were asked whether the Edinburgh School, as it exists to-day, is worthy of its old renown, and of the prosperity which it enjoys, I should point to the facts, that here the professors make their professorial duties the great work of their lives; that alongside of the professorial staff there is a powerful body of extramural lecturers; and that the system of practical instruction has been thoroughly established. You have been taught to believe because you have seen, and that in every department. But on these matters I need not on this occasion dwell.

And now, Gentlemen, there are some practical suggestions which I wish to offer you before we part; and, first, as to your *plans*. Avoid entering at once upon the responsibility of private practice. As many as can should secure appointments as residents, either in our own Infirmary or in other hospitals. All should become assistants to practitioners. As many as possible should visit other schools. It has become customary for our graduates to visit the great schools of Germany and France, so as to have the privilege of seeing the practice or working in the laboratories of the great Continental teachers. It is true that, by means of books and periodicals, a diligent student may become well informed about what is being done abroad, but a far more accurate and intelligent conception is obtained if he has the opportunity of seeing the work and the workers for himself. If you have opportunity, go to see the practice in Glasgow, Dublin, and the other schools in our own country, where you will find able teachers and ample material to interest and instruct you. London, with its numerous schools and myriads of patients, has many attractions for our young graduates. In whatever department your interest may centre, you will find ample opportunity for your special study there; and for such study you will find your thoroughly practical Edinburgh grounding an admirable preparation. Of course, to those whose worthy ambition it is to become connected with one of the London schools, a period of study in the

particular hospital is much to be recommended. Wherever you go make the most of your opportunities. Study thoroughly and carefully the cases which come before you. Some men out of very little learn a great deal. Others out of abundance learn nothing. It is with us, as Dr Johnson said it was with travellers, "Some men see more on the Clapham stage than others on the tour of Europe."

In relation to our *art*. Seek to master it. You have as yet only made a beginning. Let each resolve to be an earnest student all his life, to strive to master every department, and keep abreast of the advancing march of knowledge. One is apt to fall behind. I have known men who left college with their hearts high, with a consciousness that they were abreast of the day, gradually fall behind, until in a few years they had scarcely any ideas in common with those who had been working steadily. I have seen such men get into a slipshod routine style of practice, never making certain of any diagnosis, but developing a most unreasonable faith in the powers of a few stock prescriptions. Perhaps they even become dangerous practitioners, like him of whom it was said, that

"His most tender mercy was neglect."

And sometimes, perhaps, they may sink to the level typified in the story of a practitioner who, when asked some forty years ago, whether he believed in phrenology, replied, "I never keep it [he had a shop] and I never use it, but I think it highly probable that, if given frequently, and in liberal doses, it may be useful in irregular gout."

I have seen, on the other hand, a graduate leave the University but slenderly equipped, set himself to work, and patiently plod on till he became most efficient. Such men when they get a chance drop into the Infirmary, haunt the pathological theatre, run about the medical and the surgical wards, inquiring and picking up everywhere till they became first-rate practitioners.

Read regularly some of the best periodicals. Systematically note the points worth remembering. Get new books as they come out, at least get a reading of them. Do not grudge the cost of such as are worthy of a permanent place in your libraries. You will soon get to know the vexation of new editions. Get the new, and part with the old. Books are as necessary as bread. Aim at culture as well as proficiency. In your reading avoid mere compilations; try to get at the original authorities.

But, Gentlemen, not only must you endeavour to keep abreast of our science and our art, you must seek to advance them. Seize every opportunity of original investigation. Work not in order that you may achieve an original something, but that you may clearly make out the facts you have before you, and that you may understand and benefit the patients placed under your care.

For all these ends cultivate the faculty of discriminating perception. We have sought to train it during your college course.

Do you not remember how difficult it was for you at first to perceive objects—say under the microscope—which now you can pick up at a glance, or to hear sounds which are now at once apparent to you? Did you notice, further, how apt you were at first to confound things which you afterwards learned perfectly to discriminate? There lie around you, as around us all, multitudes of facts, of material for observation, which the careful cultivation of the faculty of discriminating perception may enable us to seize.

But whatever success may attend you in study or research, see that you keep yourself free from scientific arrogance. I have seen fine young fellows spoiled by it. They had got, perhaps, a higher magnifying power, or a new microtome, a new method of preparing sections, or some new instrument of clinical research. Such revelations followed that all previous work was put out of court, and the investigators of the year before were pooh-poohed as antiquated simpletons. Perhaps, after a time, the youth discovered the absurdity of it all; but meanwhile he had been doing great injustice to sound and careful observers, and making himself ridiculous. I have seen such a man so full of dogmatic assertion that I have been fain to adopt the expression which Cromwell once used to some Scottish clergymen—"I entreat you to believe that it is possible that you may be mistaken."

In relation to your *professional brethren*. Cultivate their friendship. Keep up the kindly feelings which animate you towards those who this day are by your side, and who have been your companions during the past happy, though laborious years. Cultivate professional friendships, also, in the districts where you may settle. You may find it no easy task, especially if you are rapidly successful. But if you strive to do your duty quietly, you will find the men whose friendship is most worth possessing gather around you. But, above all things, beware of permitting jealousy to take possession of your heart. Yielding to it enslaves you. Resistance at the beginning sets you free. I remember a man in another profession who seemed to me to have more perfectly than any one I have known overcome this weakness; and one day I discovered what his early struggle had been. An old college friend, settled somewhere in his neighbourhood, came to assist him in some parish work. The delight of the parishioners with the stranger found expression upon many sides. The instinctive feeling was not to have him back. The resolution was to have him as often as possible. Upon this little battlefield this friend of mine had fought and conquered. Consider the interests of your fellow-practitioners as you do your own. Consider their feelings as you would wish them to consider yours. If a difference arise, think it over carefully. Do not listen to the gossips. Put yourself in the position of your neighbour, and see how the matter looks from that point of view; and if you feel that you must speak about the matter in dispute, go to your neighbour and speak plainly, and with a manly courtesy.

In your relations to *your patients* take care that no thought about yourselves intrudes as you discharge your duties. In perfect simplicity do your best in every case. You will find that few relationships in life are more delightful than that between a patient and the doctor whom he trusts. Take pains to be in every way worthy of that confidence.

I have seen some men of the baser sort who seemed to regard their patients mainly in the light of fees. Well, that is an element which you cannot despise, and which you must not affect to despise, and yet which should have no place in comparison with the other considerations. I have known some hard men who at each bedside seemed to see nothing but a case—no scintillation of kindly human sympathy ever throwing its light over their countenances. Such men may be very scientific, and may be good practitioners, but their hardness diminishes their usefulness to an extent of which they have little notion, and deprives them of that regard which in other respects they may well deserve. I have known some, again, to whom the nature of the sickness was but a small element, who had a certain *bonhomie* which carried them through wonderfully, and had to do duty for more solid qualities; and of this type we may recognise several varieties. There is the knowing man of the world, whose first wish is to please; who suits himself to the individual peculiarities of the patient and his friends; who studies their weaknesses rather than their maladies. To show you such characteristics is enough to lead you to avoid them. Then there is the kindly sentimentalist, who takes no grip of the case, and who earns from shallow natures a cheap and often a passing popularity. Let your aim be thoroughly to investigate and carefully to consider each case, while you remember with a true and manly sympathy the suffering and trouble of the fellow-mortal who is the subject of your care.

No profession that I know of affords greater facilities for—nay, even temptations to a light-hearted, easy-going, self-asserting, superficial dealing. Any quackery without or within the profession may command a measure of success. But such success must become a source of misery in the long-run. Be honest, be thorough. Remember the tremendous issues entrusted to you. Care for your patients, and study their cases as you would wish that those you most love should be cared for by others. And if you are wise, you will seek to guide your conduct by the highest rules; to find your satisfaction in the Divine approval, and to do your work, “Not with eye-service as men-pleasers.”

And now, Gentlemen, in the name of the Faculty and of the University, I bid you God-speed. May you lead efficient and therefore happy lives. Wherever you go may you be found worthy representatives of your renowned University, and may some of you add to her renown.

ARTICLE II.—*Brief Notes of a Case of Double Floating Kidney, Diagnosed during Life, and verified by Post-Mortem Examination.* By GEORGE HUNTER, M.D., Linlithgow.

THREE years ago, when the subject of floating kidney was before the Pathological Society of London, several members, including the president, stated that they had never met with a movable kidney after death. A committee was then appointed to inquire into the matter, and the secretary invited members of the profession who had met with such cases to forward him details and contribute information regarding them.

Thinking that the interest in this subject had not altogether ceased, and as opportunities of verifying a diagnosis of this class of cases occur but seldom, inasmuch as floating kidney is not *per se* a fatal ailment, I have placed before you brief notes of a case where both kidneys were movable, and where, from the intercurrent of a fatal disease, I was enabled to confirm the correctness of my diagnosis by post-mortem examination.

E. M., æt 32, single, a thin, delicate-looking woman, had never been very robust since she was twelve years of age, when she suffered from morbus coxæ, for which she was under treatment four years, and which left her with a very much increased lumbo-sacral curve. In the autumn of 1875 she came under my care for an attack of gastric catarrh, with symptoms of ulceration of stomach. Whilst under treatment for this affection, repeated epigastric and abdominal palpations were made, and I then discovered two tumours, one in each hypochondrium. That in the right was the more distinct and more movable. It was situated immediately below the right costal margins, and could, by a little management, be distinctly grasped between the fingers and thumb. Its surface was smooth, rather firm and elastic, and its form resembled that of a large kidney. It glided readily from between the fingers backwards into the lumbar region. Left lateral decubitus, combined at times with a sudden jerky inspiration, caused it to move forwards and inwards towards the umbilicus, round which on the right the range of motion was considerable. Firm pressure gave rise to a painful sickening sensation, but gentle handling caused no uneasiness. The patient complained occasionally of a crampy, dragging feeling in the tumour, and active exertion brought on a condition of faintness, especially if the flannel bandage she wore round it for support had been left off.

The tumour on the left side was not so easily felt, but by pressing deeply in the left loin from behind it could be pushed forward, grasped between the fingers and thumb, moved about to a certain extent, then allowed to glide backwards into its old position. It was not easy to satisfy one's self that the whole tumour descended below the costal margins; but it had the same smoothness and elasticity,

rounded margins, rather oval form, and slippery feeling as that on the right.

By a little manipulation, E. M. could at will, after a time, bring the one or the other from its hiding-place in such a way that the examiner could have no difficulty in satisfying himself of the existence, locality, and movements of her "lumps," as she called them.

Great uneasiness and pain, radiating from the epigastrium in various directions, and shooting through to the back, were frequently complained of; but it was probable that these symptoms had reference to the condition of the mucous membrane of the stomach.

The diagnosis arrived at was that both kidneys were movable, and from this time until the date of her death several medical friends examined her, and had the displacement pointed out to them.

Her stomach symptoms began to increase in severity, and at varying intervals during the following two years, she not only suffered much from pain, with copious and distressing vomiting, but also from serious gastric hæmorrhages, which were so profuse as to alarm herself and her friends. At these times the displacement of her kidneys was to her, if not to me, a matter of only secondary importance. On the afternoon of the 18th December last she was seized with sudden agonizing epigastric pain, which was soon followed by extreme collapse, and she died on the following day.

The conclusion arrived at was, that the ulceration of the mucous membrane had perforated the stomach, and that death had resulted from peritonitis and shock. To confirm this opinion a post-mortem examination was requested, and readily acceded to by the friends, who were much interested in what might be discovered, and rather taken aback by the suddenness of the fatal termination.

On the evening of the 19th, with Dr Ferguson (who was then assisting me), I made a *sectio cadaveris*, but before making any incisions, search was made for the two tumours, and without any difficulty they could be felt, handled, and moved about with nearly as much latitude as was possible during life.

On opening the abdominal cavity the contents of the stomach were seen floating about amongst the intestines, the latter being intensely reddened and congested. The stomach had not completely collapsed, and a careful examination disclosed a perforation of the posterior wall midway between the cardiac and pyloric orifices, and close to the smaller curvature. It was sufficiently large to admit the point of my little finger, and the edges had the usual clean cut margin, as if they had been formed by a gouge. A second ulcer equally large was found on the anterior wall, almost opposite the preceding. It had already eroded its entire thickness, and only the peritoneum, in a sloughy condition, prevented its complete perforation.

The stomach was now removed, and on pushing aside a coil of intestines on the right hypochondrium, the right kidney came into view. It was found about an inch and a half below the margin of the liver, midway between it and the umbilicus, and was quite loose and movable. Its capsule of fat had completely disappeared, and its peritoneal investment was so loose that it could be pushed about in a direction upwards, forwards, and inwards towards the mesial line. Nothing abnormal in the arrangement or distribution of the vessels or excretory duct was observed; but it had undergone extensive and almost complete cystic degeneration, and its bulk and weight were materially increased. Its pelvis was much dilated. The left kidney was found more deeply placed in the left loin. It could also be moved rather freely about in a direction from under the ribs forwards and inwards. There was a complete absence of the peri-nephric fat, and the vessels of this side seemed shorter than those on the right. It was decidedly hypertrophied both in its cortical and tubular portions, and considerably larger and heavier than an ordinary kidney.

Whilst cases like the preceding are doubtless by no means common, yet when attention is turned to the possibility of such a condition, and search is made for it, every now and again one meets with a patient in whom one of the kidneys is movable, and I may mention incidentally that I have at present under my care a tall, thin woman, whose right kidney is so displaced.

As my patient suffered from painful ulceration of stomach, and never could bear anything tight round her waist, it is not at all likely that tight-lacing, as stated by Cruveilhier, could have had anything to do with the abnormal mobility of her renal organs. Nor will Ebstein's theory, that it is excited chiefly by repeated pregnancies and deliveries, afford any better explanation in this case, for E. M. was unmarried, and had never borne children. It seems more probable that the increased weight of both kidneys, combined with an abnormally loose attachment of peritoneum to the posterior abdominal wall, and the absence of the usual peri-nephric fatty envelope, may have permitted and predisposed to such a displacement.

It is also not unlikely that her old hip-joint troubles, by increasing the lumbo-sacral curve, and throwing the loins more prominently forwards, may have contributed something towards its production.

Finally, I have to apologise for the very imperfect notes and meagre anatomical details of the rather unusual pathological condition I have had the opportunity of placing before you.

ARTICLE III.—*On Foreign Bodies in the Air-Passages, with Cases.*

By J. P. BRAMWELL, M.D., L.R.C.S. Ed., one of the Visiting Surgeons to the Perth City and County Infirmary.

THE accidental intrusion of foreign bodies into the air-passages constitutes a danger of the first magnitude, imperilling life at the moment by immediate suffocation, or more slowly, but often not less surely, by the destructive pulmonary changes which follow, *e.g.*, acute broncho-pneumonia, phthisis fibrosa or tuberculosa, gangrene, abscess, emphysema, or pleurisy. There is also another danger in such cases, to which the patient is liable at any moment, *viz.*, a foreign body lodged in a bronchus may suddenly be forced by violent coughing into the trachea or larynx, thus causing immediate death either by direct obstruction or reflex laryngeal spasm. It is obvious that such cases require our most serious consideration. How are we to treat them? Certainly not by an expectant attitude, for although the most unlikely substances have been spontaneously ejected, and that in no small proportion, nevertheless death may still ensue as an indirect consequence from irremediable pulmonary lesions.

The rule of procedure now generally recognised and sanctioned by such high authorities as Brodie and Gross, the latter having had much experience in this department of surgery, is to open the trachea, and that as early as possible. This is an essential preliminary to all ulterior proceedings, averting as it does the danger of sudden suffocation.

A search for the foreign body can now be instituted with comparative safety. If it be a pin or a fish-bone which has stuck in the trachea it may be caught and dislodged by a pair of fine-bladed forceps. If the foreign body be in the larynx, such as a coffee-bean, a pea, piece of apple, or a coin, it may be ejected by pushing an elastic catheter or fine probang through the tracheal wound into the mouth; failing this, it may be removed by the mouth with the aid of the laryngoscope, or, as a last resource, the thyroid cartilage may be slit open. If, again, it has found its way into a bronchus, and it be of any weight, it may be dislodged by lowering the head, raising the body, and striking smartly over the back. If this fail, the patient should be profoundly chloroformed and search made with a pair of very fine fenestrated forceps formed of a material which will bend to any angle. "The difficulties in the way of success, however, are here very great."¹

The famous "Brunel case" admirably illustrates the paramount importance of early tracheotomy. Every attempt made to dislodge the half-sovereign from that gentleman's bronchus by inverting his body was defeated by the suffocating spasm which ensued so soon as the coin reached the larynx in its upward course. No sooner,

¹ See Brodie's *Surgery*.

however, was tracheotomy performed and the attempt renewed, than the foreign body rolled through the rima glottidis "as through that of a corpse," struck with force the canine teeth, and fell on the floor.

The teaching of all this is of the utmost importance, and is sufficiently obvious, viz., that tracheotomy is indispensable as a preliminary measure, and that obstructive laryngeal spasm is thus entirely averted, always assuming that the wound is kept freely open.

CASE I.—*Plum-stone in Right Bronchus. Removal. Recovery.*

E. M'N., a healthy girl aged eight years, on the 2d of last November had been romping with a plum-stone in her mouth, which passed by accident into the trachea. My friend Dr Frew, of this city, saw her shortly after, and as she was retching and in considerable distress, he passed a bougie down the œsophagus. Immediate relief followed, the child exclaiming "It's away!"

The vomiting which often occurs in such cases is very misleading, directing as it naturally does the surgeon's attention to the œsophagus, instead of the respiratory passages. I can only explain the relief obtained by assuming that the passage of the œsophageal bougie induced reflex spasm in the trachea, which spasm forced the stone out of the main passage into the right bronchus.

Dr Frew was again called on Monday (the 6th), his patient having had during this interval several attacks of suffocative cough. The chest was now examined. On the left side the respiration was puerile; on the right, bronchial at the lung apex, and *nil* below it. There was no "up-and-down movement" sound, indicating clearly that the plum-stone had got impacted in the right bronchus. On the same evening I was called in consultation, and having satisfied myself that the foreign body was in the position indicated, I advised that tracheotomy should be performed without delay. The child occupied a semi-erect position, seemed to have no difficulty in breathing, and smiled sweetly. This period of repose was taken, however, for what it was worth—in such cases certainly not much. Having explained the imminent danger of the child to her father he readily consented that an operation should at once be performed.

The girl was laid on a firm table, and after being chloroformed by Dr Duncan, our house-surgeon, her shoulders were well raised, and her head thrown back as far as possible. I then performed the operation, making a very free incision in the trachea. She coughed violently, but this did not dislodge the foreign body. I now introduced a pair of fine-bladed fenestrated forceps, pushed them down the trachea, and then opened the handles, thus dilating the tracheal opening to its utmost limits; at the same time our patient was rolled over on her face and her head lowered, the back being forcibly struck with the hand. Several

violent coughs ensued, during one of which the plum-stone was ejected through the tracheal wound upon the table.

Thus happily terminated our anxious endeavours. The wound was left to close spontaneously, this being considered safer than an immediate occlusion by stitches, with the danger of emphysema following.

During the night after the operation there was a good deal of coughing, but after that time little or none. There were no secondary inflammatory symptoms, her recovery was good, and she is now in perfect health.

CASE II.—*Piece of Apple in Larynx. Tracheotomy. Removal of Foreign Body. Recovery.*

One morning an anxious mother brought her infant son aged twenty-three months to my house. He was a fine healthy child, but a serious accident had befallen him. His mother had put into his hand an apple, which he had tried to eat, and a piece had found its way into his larynx. This was sufficiently clear from the obstructed breathing and the laryngeal character of his cough. This poor child had also his vomiting fit after the accident, and the mother urged me to remove the piece of apple from her child's throat, supposing that it had entered his œsophagus. I explained to her the serious nature of the accident, and requested her to go home at once and send for her family doctor (the late Dr Scott of Perth), which she accordingly did.

When called in consultation, two hours after, I found the child dying rapidly from suffocation. With Dr Scott's approval I opened the trachea and pushed an elastic bougie from below upwards through the glottis. Ulterior events showed that I had by this step dislodged this foreign body, which the child must have swallowed, but as there was not absolute proof of this, I introduced a tracheal tube, which the child wore for three days. At the end of this time it was removed, and as the respiration was now normal it was finally withdrawn. There were no secondary inflammatory symptoms, the wound filled up by granulation, and in two weeks it had quite closed; the recovery was excellent.

CASE III.—*Horse-bean in Right Bronchus. Tracheotomy. Recovery.*

This case was treated in the Perth Infirmary by my late respected friend and preceptor, Dr H. Macfarlane, and as it was never published, and being of much interest, I record it now. The subject was a healthy girl seven years of age; she had been playing with a horse-bean in her mouth which slipped beyond her control and got impacted in the right bronchus, entirely cutting off the respiration on that side. Tracheotomy was performed by Dr Macfarlane and an attempt made by forceps to reach the foreign body, but this was entirely defeated by the violent paroxysms of coughing. It was now deemed best to temporize and watch the

progress of the case. Severe catarrhal pneumonia ensued, which lasted two or three weeks; it then began to decline, and one morning the bean was coughed up, having broken into three pieces. During all this period the wound in the trachea was kept open as a precautionary measure. All now seemed to go well, but soon after a violent attack of measles ensued. This also in due time subsided, and the recovery was excellent.

Note.—It is not improbable that a lowering of the head and shoulders, with a raising of the rest of the body, aided by sharp percussion on the back, would have dislodged the foreign body in this case after tracheotomy had been performed. At all events it is a simple procedure, which ought always to be tried before leaving matters to the unaided efforts of nature. At this time, however, the “Brunel case” had not occurred, and my friend had not the benefit of Brodie’s experience, as we now have.

ARTICLE IV.—*Cases Treated in Leith Hospital.* By W. A. FINLAY, M.D., F.R.C.S.E.

(Continued from p. 445, vol. xxii.)

THE next two cases are instances of compound depressed fracture of the skull, which owed their chief importance to the fact that the inner table was splintered, and its sharp fragments driven in upon the surface of the dura mater. Although they possessed the outward characteristics of compound depressed fractures, yet the concavity and comminution of the depressed portion sufficiently indicated that they essentially partook of the nature of punctured fracture, and demanded operative interference. In them the danger was not so much from compression, as from inflammation from irritation caused by the fragments of the inner table.

CASE 1.—W. E., a labourer, æt. 40, was admitted on the 26th of March 1879. Shortly before his admission he had been working on board a ship, and had his forehead driven violently against the angle of an iron tank, a bag containing a heavy load having fallen on the back of his head whilst he was in a stooping position. There was a wound about an inch in length situated transversely over the frontal bone, about an inch above the supra-orbital arch. The bone was fractured and greatly depressed to nearly the same extent as the external wound. The depressed portion was comminuted and concave on its outer surface. It was also fissured along its base, which was situated at the superior part of the fracture. The patient seemed to answer questions fairly well, but not altogether sensibly, and in the evening did not recollect anything that had happened from the time of the accident till after the operation. Immediately after examining the patient, chloroform

having been administered, I removed a semicircular piece of bone by trephining, and then raised and removed the fractured pieces. The inner table was splintered, and bits of it had to be picked off the dura mater, which was scratched by them. The wound was dressed simply with a piece of sponge to act as a gentle compress. Ice was applied to the head during the first fortnight. After the first few days directions were given that the wound should be dressed four or five times in the 24 hours, to afford free vent to the discharge. On the sixth day granulations began to appear, and the healing has gone on favourably, and now (six weeks after the operation) the gap is to a great extent obliterated. An abscess formed under the scalp about the sixteenth day. This was opened, and still continues to discharge a little. It is quite external, and there have never been any symptoms of inflammation within the cranium.

The patient got out of bed on the twenty-third day, and sat up for three hours in the ward. This rash indulgence of his desire to be up was followed by headache for a day or two, but no serious consequences resulted. He has not, however, been allowed to get out of bed again (as yet, 9th May), although he says he feels quite well.

[Since the above was written, some little pieces of dead bone were discharged in the case of W. E. After that he improved rapidly, and was dismissed on the 9th of June.]

CASE 2.—Compound penetrating fracture of parietal bone followed by abscess in brain. Late on the night of the 15th of December 1878 I was called to see for the first time J. R., a strong young labourer (æt. 18). His friends said that about noon on the 13th he was struck on the head by the blunt point of a heavy piece of wood (a spoke for use in wire-fencing), which fell vertically from a considerable height. He had the wound dressed after the accident, but did not consider it serious. Next day, however, he complained of pain in the head, and on his returning from his work, to which he had gone, his comrades noticed that he was very drowsy. This drowsiness gradually increased, and when I saw him about sixty hours after the accident, he was almost wholly unconscious, and could with difficulty be roused in the slightest degree. His pulse was quick and bounding. His temperature was 105°, and his pupils were contracted and insensible to light. On exploring the wound I found a distinct depressed fracture of the right parietal bone situated about one inch from the posterior border of the bone, and about one inch and a half from the mesial line. The depression just admitted the point of my fore-finger. The depressed portion was fissured along its base. There was partial paralysis of the left arm and leg, and sensation was less deadened on the right than on the left side of the body.

I had the patient at once removed from his small lodging to the

hospital, where I trephined and raised the depressed bone. After the bulk of the depression was raised a spiculum of the inner table was seen to be sticking into the dura mater. On withdrawing this piece of bone with a pair of dressing forceps, there was an immediate gush of pus, which had been pent up under the membrane. About half an ounce of pus must have escaped at the first—a remarkable quantity, seeing that only sixty hours had elapsed since the occurrence of the accident. In the pus there was observed a bit of brain substance, showing that the spiculum had penetrated the brain, which indeed it could not have failed to do, seeing that it was nearly half an inch in length, and was pointing perpendicularly. At 1.30 A.M., soon after the operation, his temperature had fallen to 103°·6. About one o'clock in the afternoon he became conscious, and was able to understand and answer questions, although he spoke indistinctly and with difficulty.

At 3 P.M. his temperature was 102°·2, but it rose again to 103° in the evening, and did not fall again until he became moribund. On the 17th he continued to be sensible, and to speak with difficulty. He moved the right arm and leg freely, but could scarcely move the left arm or the left leg at all. The partial anæsthesia of the left side was also well marked. These conditions continued to the end. He was unable to close the right eyelid, but the left one drooped, and he could not open it. On the morning of the 18th he had an epileptic fit, which affected the left side alone, the left arm especially being violently twitched about. After this he gradually sank, and died in the afternoon. I was unable to obtain permission to make a post-mortem examination. If there had been an opportunity of extracting the penetrating spike of bone immediately after the accident, the patient would have had a chance, although even then a small one, of recovery. As it was, nothing more could be hoped for after the operation than the restoration of consciousness for a time. None the less, the case points to the necessity for exploring with the finger all wounds of the scalp, underneath which there may possibly be a fracture.

II. *Case of Nerve-stretching for Sciatica.*

CASE 3.—D. M^c., a sailor, æt. 28, was admitted on the 28th of June 1878, immediately after his arrival in Leith at the end of a long voyage, during which he had been laid up for five weeks with what seems to have been a fever of some kind. There was no doctor on board the ship. He was in a very weak condition when he came to hospital, and complained of pains in various muscles, but what he suffered most severely from was sciatica in the right thigh and leg. The pain of this became intolerable, and resisted all the ordinary methods of treatment, both internal and external. Latterly he was from this cause unable to turn in bed without extreme pain, and the only relief he got was from the hypodermic injection of morphia, which gave him temporary respite. It was

extremely undesirable that he should become dependent upon the frequent repetition of the morphia. Encouraged by the results of the operation of nerve-stretching in Mr Lister's and Mr Chiene's cases, I resolved to give him the chance of cure which it afforded.

On the 15th of August I made an incision one inch and a half in length over the nerve at the lower part of the buttock, and having got my finger underneath it raised it from its bed and stretched it thoroughly. The wound healed under antiseptic dressings, and the patient had no return of the sciatica from the time of the operation as long as he remained in hospital (till the 16th of September). By that time he had so much improved in every way that he returned to his home in the north-west of Scotland, and I have not heard that there has been any return of the pain. The benefit which he derived from the operation was immediate. I am not aware that any evil effects have ever been observed to follow this operation.

III. *Wound of Larynx and Œsophagus. Tracheotomy.*

CASE 4.—A. N., a married woman, aged about 30, was admitted on the evening of the 21st March 1878, shortly after having attempted to commit suicide by cutting her throat with a razor. The larynx was completely divided, and several pieces of its cartilage were hacked and hanging down, showing that more than one cut had been made, and indicating the determined nature of the attempt. The Œsophagus also was almost completely divided, a small portion of its circumference posteriorly being alone uncut. The windpipe was extremely mobile, and kept moving up and down during the acts of breathing to an abnormal extent. A large quantity of saliva constantly flowed down the Œsophagus, and escaped by the wound into the trachea, causing considerable additional embarrassment to the respiration.

The external wound was $2\frac{3}{4}$ inches in length, and was oblique in direction, being higher at the right side. It was very much lacerated, and situated in the inter-carotid space, so that none of the large vessels were injured. The patient was fed by means of a stomach-tube passed through the wound. Next morning the respiration was very much embarrassed, chiefly on account of the lacerated edges of the larynx acting like a valve, and preventing free entrance of air. As the blood was evidently being imperfectly and with difficulty aerated, I then performed tracheotomy low down in the neck, after which the breathing became quiet and comfortable. I also introduced the tube of a stomach-pump by the nostril down the Œsophagus into the stomach, guiding its point with the finger as it appeared at the wound. This tube was retained in position to prevent unnecessary interference with the wound, and through it the patient was fed three times daily with milk and beef-tea and eggs. For some time she showed symptoms of considerable nervous excitement, and retained the strong desire

to destroy herself, which she evinced by attempting to pull out the tracheotomy tube. On this account her hands were strapped down to the sides of the bed.

On the fourth day she had a little bronchitis, which lasted for some days, but there never was any sign of pneumonia.

On the 24th of March, one week after the introduction of the stomach-tube, it was withdrawn, and the patient was able to swallow fluid food, a considerable quantity of which was lost by escaping through the wound in the œsophagus. She also had nutrient enemata until the power of swallowing became more satisfactory. After the separation of a quantity of sloughy matter from the wound, it gradually healed, and was quite whole on the 30th of April. The ordinary tracheotomy-tube was then replaced by a perforated one, which, being no longer required, was removed on the 3d of May.

On the 6th of May she was discharged from the hospital. She could breathe and swallow naturally, and was much more cheerful, her melancholia having passed away. She spoke in a loud whisper, and this condition seemed to be permanent, as it was present some months after her removal from hospital. The patient was insane at the time of the occurrence, and continued to suffer from melancholia for a considerable time after admission. That the large vessels escaped was doubtless due to the well-known fact, that those who attempt to commit suicide in this way generally look upon the wound of the windpipe as the one most likely to accomplish their object, and therefore direct the weapon as much as possible towards the middle of the throat.

IV. *Strangulated Hernia.*

Of the two next cases, the first was operated on antiseptically, the other without antiseptics. The point of interest in them is that although all wounds heal more safely under the antiseptic treatment, yet in the strangulated hernia, where the symptoms are urgent, no time should be lost for the sake of obtaining the spray and dressings requisite for that treatment, as the danger of prolonged strangulation would greatly outweigh the advantage of the antiseptic treatment under such circumstances.

CASE 5.—Mrs S., æt. 32, admitted 15th December, suffering from strangulated femoral hernia. The hernia had existed for four years. It had become strangulated eight hours before the patient's admission to hospital. Taxis having failed to effect reduction, I operated and reduced the hernia, which consisted of a small knuckle of bowel, and a large portion of omentum. The patient required catheterism for the first two days, but otherwise everything went on satisfactorily. The antiseptic treatment was carried out fully throughout the case. Five weeks elapsed before the wound

was absolutely whole. After that a truss was made for the patient, and she left the hospital.

CASE 6.—Mrs S., æt. 59, admitted 15th April 1879, suffering from strangulated femoral hernia. The hernia had existed for ten years. It had become strangulated twelve hours before admission. The symptoms were very acute, and the patient in a very weak condition. Taxis had been fairly tried. I operated at once without antiseptic precautions. The sac was very much thickened. There was great discoloration of the bowel, which was very tightly constricted. After reduction of the hernia the wound was carefully stitched, and then dressed with ordinary dry lint. It healed for the most part by first intention, and was absolutely whole at the end of a fortnight. The patient's progress after the operation was in every way satisfactory. She went to her home in Kilmarnock on the 9th of May. In regard to antiseptic dressings, I have often thought that their use would be greatly simplified if we could get a substance of the nature of collodion carbolized, and having in addition the property of adhering to wet surfaces. Such a substance might be applied under the spray to the skin and edges of an antiseptic dressing, plenty of room being left for the discharges under the dressing. After that a bandage might be applied for the purpose of giving the necessary support, but not, as at present, to prevent entrance of air, which would be effectually excluded by the dressing underneath, seeing that the edges of the dressing would be adherent to the skin.

ARTICLE V.—*Practical Observations on some of the more Common Diseases of Early Life.* By CHARLES BELL, M.D., Lecturer on Midwifery and the Diseases of Women and Children, Fellow of the Royal College of Physicians, Edinburgh, etc.

(Continued from page 541, vol. xxiv.)

ENLARGEMENT OF THE BREASTS.

It is not unusual to find the breasts of new-born infants swollen and containing a milky fluid, which in some cases flows from the nipple when the breasts are pressed. This should never be done, however, as it is liable to produce inflammation. In general little treatment is required, as the fluid is soon absorbed. Should this not be the case, or should the quantity of fluid continue to increase, it may be necessary to apply oil occasionally, or camphorated spirits may be used, so as readily to evaporate.

THE SEPARATION OF THE CORD.

In ordinary cases this cannot be properly classed as a disease, as in the majority of children it takes place easily, as if it were the natural result of extra-uterine life, and is quite free from any

untoward symptom. It is therefore left in general to the entire management of the nurse; but in some rare instances it is attended by serious complications, which are liable to terminate fatally. The period at which the cord separates varies in different children, a circumstance which diminishes its importance in a forensic point of view. It is not, however, altogether without interest in this respect, as the appearance of the cord clearly indicates that the child has lived after birth,¹ although it does not enable us to say how long. In the majority of cases the separation takes place about the sixth day after birth, but Billard mentions two cases which differ widely from this—in the one the cord separated on the second day, in the other not until the fifteenth day, after birth.

Considerable difference of opinion has been entertained in regard to the kind of process by which the separation is effected. Haller and Monro believed that it was a kind of gangrenous action; Gardien that it was the result of the constriction of the epidermis, which acted like a ligature; and Chaussier ascribed it to inflammation; but Billard² refutes all these opinions, and attributes it entirely to desiccation of the gelatinous matter, which commences at the cut surface and gradually progresses towards the abdomen, on reaching which the cord drops off in the same manner as the ripe fruit does from the stem. He considered that “the desiccation of the cord is altogether a physiological phenomenon” depending on vital action, and that it can take place only during life, and ceases entirely on the death of the child. When inflammation occurs, this author ascribes it to some accidental circumstance, not necessarily depending on the separation. The cicatrization, after the cord has separated, is usually completed about the fourteenth day after the birth of the child.

The complications which are most liable to accompany the separation of the cord are ulceration and hæmorrhage. Ulceration is generally of trifling importance, and readily yields to astringent lotions, or to dusting with pulvis calaminaris, after being bathed with a weak lotion of Condyl’s red fluid, in proportion of one to eight of water. Hæmorrhage is a much more serious complication, and too often resists every kind of treatment.

This disease seems to have been first described by Mauriceau, but it has been little noticed by authors in this country until comparatively recently, although Dr S. Smith of New York has published a paper on the subject, in which he points out the dangerous character of the disease.³ We are also indebted to Dr Peel Ritchie⁴ for an excellent paper on the subject.

There are two kinds of the disease, the local and uncomplicated; the other is always combined with some malformation or disease of the liver. The one is comparatively simple and readily yields to local astringents, but the other is very unmanageable, and generally

¹ Caspar, p. 359.

² *Diseases of Infants*, p. 17.

³ Caspar, *op. cit.* et *loc.*

⁴ *Edinburgh Medical Journal*, 1868.

proves fatal. It is supposed to occur more frequently in children of a hæmorrhagic tendency, and from its occurring in more than one of a family, it has been attributed to hereditary taint; and statistics prove that it is more likely to occur in male children. In proof of the hæmorrhagic tendency and hereditary influence, Mr Manley mentions a striking instance in which the mother, the grandmother, and aunt died from epistaxis, and the second child died from hæmorrhage from the umbilical cord and from the gums on the third day after its birth. In all the cases of umbilical hæmorrhage there is a remarkable fluidity of the blood, which has little disposition to coagulate.

Treatment.—In the simple form of hæmorrhage local styptics are in general sufficient to stop the bleeding, and the best is the solution of the perchloride of iron. Should this fail, caustic or the actual cautery must be had recourse to. But in the aggravated form it will be necessary to give constitutional remedies along with the local astringents, for the purpose of improving the composition of the blood and the contractile power of the bloodvessels, and the most useful medicines are the muriate tincture of iron and the citrate of iron. If there is reason to suspect any lesion of the liver from the yellow colour of the skin, very mild aperients may be given, and the most suitable will be castor-oil or the fluid magnesia of Dinneford, or the liquor magnesiæ carb. Should all remedies fail in checking the hæmorrhage, the subcutaneous injection of ergotine may be employed.

VOMITING OF INFANTS.

This is of such frequent occurrence, and is in general attended with so little annoyance to the child, that it can scarcely be looked upon as a disease; on the contrary, some authors consider that it is a sign of health. Where the matter vomited is simply curdled milk, it merely indicates that the stomach has been overloaded, or that the child has been *hobbled* in the nurse's arms too soon after sucking. It is very different, however, when the matter ejected is combined with blood, which is apt to alarm the mother, although it may be easily explained. Dr Underwood mentions two cases in which the children vomited clotted blood when only two days old without appearing to suffer. This circumstance may be readily explained by their sucking the blood from the mother's chopped nipples, and its proving indigestible; it was rejected by the stomach, which has a remarkable power of rejecting what is unsuitable. If what is vomited, however, has a sour smell, it is a proof that the child is suffering from excessive acidity; and if the vomiting is frequent and accompanied with a peculiar rolling of the child's head and squinting, it indicates some head affection, which may terminate in hydrocephalus.

Treatment.—In the first form of this ailment there is no treatment actually necessary beyond avoiding the cause. In the second

it is necessary to attend to the state of the mother's breasts and heal any chaps, which are extremely liable to occur in the commencement of nursing, especially in primiparæ. When it is depending on head affection, the treatment will vary according to the nature of the disease of which it is a symptom.

DIARRHŒA.

In treating of this disease it must be remembered that the bowels in infancy are naturally more frequently moved than at a more advanced period of life, and that it is usual for them to be opened three or four times every day when in health. Therefore, when informed by an inexperienced and anxious mother that her baby has got diarrhœa, it is necessary to inquire what is the character of the evacuation, as well as their frequency, before prescribing, lest we should be induced to treat what is really a natural state of matters. Diarrhœa is, however, a very common ailment in infancy, and it is liable to assume a variety of characters, which has led some authors¹ to classify it under a number of different heads, according to the appearance of the evacuations; but for the purpose of practice, it is necessary to distinguish them into two only, viz., the sympathetic, resulting from disease of some of the important abdominal organs, in the treatment of which it will be duly considered; and the idiopathic, proceeding from irritation of the intestines themselves, which now demands our attention.

Idiopathic or Simple Diarrhœa.—In this form of disease the number of evacuations varies, as well as their appearance and consistency. In colour, they may be pale and watery, green and sour smelled, clayish, and streaked with blood, or they may be dark, bilious, and offensive. When the evacuations have their natural appearance with a certain degree of consistency, and have been preceded by constipation, it is a proof that the bowels are loaded, and their frequency indicates a natural effort to relieve them. When they are green and sour smelled, they are often preceded or accompanied by convulsions, and during the intervals of the fits there are startings of the limbs, spasmodic twitching of the muscles of the face, severe griping, and violent screaming. This form is known by the nurses under the name of "*Green Scour*." When the evacuations are of a clay colour, streaked with blood, and of pasty consistence, it often indicates that the wet-nurse has become regular in her monthly discharge; when they are pale and watery, it is generally called the watery gripes. The appearance of the tongue varies in different cases. It is sometimes covered with a brown or white fur in the centre with red edges, or it may have a fleshy redness all over. The skin is often hot and dry, accompanied with great thirst, and these symptoms generally become aggravated towards night.

Cause.—The most common causes of this disease are constipation,

¹ *Vide* Billard, Churchill, Ellis, West, etc.

unwholesome diet, the sudden checking of some eruption or discharge, exposure to cold, and teething; or it may proceed from epidemic influence.

Treatment.—If it proceeds from a constipated or loaded state of the bowels, a mild aperient should be given, consisting either of castor-oil, rhubarb and potash, or magnesia, proportioned to the age of the child. In many instances this removes the disease at once. Should this not be the case, recourse must then be had to astringents and antacids. The most suitable of these is chalk mixture, of which a small teaspoonful may be given after each evacuation. Should this not be successful, a few drops of the tincture of catechu may be combined with it, and if there is much griping a drop of laudanum may be added; but it must be remembered, that it must not be repeated *too often*, as infants cannot bear narcotics in corresponding proportion to aperients, or as they may do at a more advanced period of life. When the evacuations are pale, showing a deficiency of bile, it may be beneficial to give, along with antacids, a small proportion of the hydrargyri-cum-creta. In some instances a warm bath, after which rubbing the stomach with linimentum opii, is very useful.

If the disease resists all those remedies, it will be advisable to ascertain the state of health of the nurse, lest it should be that the milk may not be agreeing with the child. In which case she ought to undergo treatment with the view of improving her general health, and rendering her milk digestible; but should this not be accomplished, another nurse must be procured.

If the diarrhoea comes on after the child is weaned, it may be the consequence of the food disagreeing, or of the irritation of teething. In such cases the diet must be changed, and, in place of giving rusks, which constitutes the fashionable food, the crumbs of stale bread should be given in boiled milk, or in the juice of underdone butcher-meat. I have observed the greatest benefit from the use of a sort of bread made by boiling a pound of flour, tightly tied in a linen bag, for two hours, after which it is thoroughly baked in the oven. The outer crust should then be removed, and the internal parts reduced to powder by means of a grater. This may be given instead of the bread-crumbs in milk.

DYSENTERY.

According to Dr Coley this is one of the most common and fatal of the infantile ailments. He states that the great distinction between it and diarrhoea is, that it is in the commencement accompanied with pain, and that it is important to attend to this circumstance, because if the same treatment is pursued in both diseases it might lead to fatal results; but he overlooks the fact that in the form of diarrhoea known by the common name of "watery gripes," there is often severe pain; therefore if it were not for the characteristic appearance of the evacuations, and other

symptoms, the one disease might readily be mistaken for the other.¹

Dysentery is much more common in England than in Scotland, and Dr Meigs states that it is met with in America in the epidemic, endemic, and sporadic forms in certain districts, and according to his experience it affects boys more frequently than girls. In illustration of this, he mentions that out of 39 cases which came under his care 27 were boys, and only 12 girls; and that he found it generally in the second and third years of age. It may occur either as an idiopathic or sympathetic ailment; but in the latter form it is most frequently the consequence of smallpox.

It commences with chilliness and an audible rumbling in the bowels, followed by evacuations of bloody mucus, which are passed with severe pain and tenesmus. The face becomes pale and contracted—loss of appetite—the stomach painful and tympanitic. In some cases, especially when the disease is epidemic, and the evacuation contains much blood, and there is considerable vascular excitement, the cerebral functions become disordered, and the excito-motory system is so affected as to produce irregular contractions, accompanied with delirium and stupor—the convulsions often ending in opisthotonos. The delirium and stupor, accompanied with convulsions, are most apt to occur when the ileum and upper part of the colon are the seat of the disease; and opisthotonos or continued convulsions of the muscles of the back when the lower portion of the colon and the rectum are affected.² As the disease advances the skin becomes cold, the pulse feeble, the expression of the countenance cadaverous, the stomach irritable, ejecting everything—at last death terminates the suffering of the patient, generally within five days, but in some virulent cases even within forty-eight hours. In more favourable cases the surface of the body gradually increases in temperature, and a sort of remittent fever comes on, and the dysentery subsides.

In the chronic form of the disease the symptoms are less severe, and sometimes they may pass unnoticed for several days—the patient merely showing a disinclination for exertion or amusement; then the rumbling noise commences in the abdomen, followed by an urgent desire to evacuate the bowels; along with these symptoms there is slight pain after eating, especially after breakfast. This form may in some instances continue for months, and although there may be only one evacuation in the twenty-four hours. There is an increasing emaciation. The chronic form of the disease is more liable to take place in scrofulous children, and the evacuations are generally of a muco-purulent character.

Post-mortem Appearances.—The mucous membrane of the intes-

¹ Churchill states that “the only positive distinction between dysentery and diarrhœa is the presence in the former of small muco-sanguineous evacuations, with some tenesmus.”—*Diseases of Children*, p. 637.

² Coley, *op. cit.*

tines is thickened, inflamed, and soft; and in some cases ulcerated. The submucous tissue is ecchymosed, and there are sometimes patches of pseudo membrane. Dr Coley states that he has found the colon much inflamed and in a thickened and doughy state, and contracted in some places. The villi prominent and injected with blood, varying in colour from bright scarlet to almost black, having in some parts the look of being extravasated. These appearances were not confined to the colon, as he observed them also in the ileum. In chronic dysentery he observed ulceration and perforations, but these are of rare occurrence.

Treatment.—The antiphlogistic treatment has been strongly recommended by some practitioners in this disease, such as the application of leeches to the abdomen, and saline aperients, such as the sulphate of magnesia, along with the tincture of gentian, in doses of ten grains to an infant, and half a drachm to a child of three years of age, to be repeated every four hours until the pain ceases. Should this not take place, then ten drops of the tincture of gentian may be added to the mixture. Coley states that he has never found the chronic form of the disease to resist the sulphate of magnesia given three or four times a day.¹ While Dr Meigs² disapproves of this mode of treatment, he suggests an equally if not a more objectionable one in the use of the nitrate of silver, both in the form of internal remedies and in enemata, alternating with small doses of opium, according to the age of the child, in castor-oil. For one of two years of age he recommends a teaspoonful of the following mixture, containing quarter of a grain of the nitrate of silver, one ounce of syrup, or of the solution of gum arabic, and four drops of laudanum, to be given every two or three hours. In addition to this, enemata, containing half a grain of the caustic to the ounce of water, should be given.

These remedies are extremely questionable in their effects, while from their repulsive character it would be difficult to get children of any age to take them. In prescribing for children it is of the utmost importance to choose those medicines which are not only likely to prove beneficial, but which are readily taken by the little patients; for even valuable remedies may prove injurious by force being required to enable them to be swallowed. They are in consequence either not given at all or only partially, while the excitement induced by their being forced often mars their usefulness. Therefore in no disease is this more likely to occur than the one under consideration, because it is distinctly of an inflammatory character, requiring the most gentle and soothing remedies.

Under these circumstances the most useful treatment will be warm baths, poultices, and leeches, and small doses of calomel and James's powder, to be repeated every two hours until the fever subsides, and the bowels are gently moved, and their evacuations become more natural. If they are much tinged with blood, a few

¹ Coley, *op. cit.*

² *Op. cit.*, p. 369.

drops of the liquor ferri pernitratis in a little sugar and water may be given with advantage every three hours, the dose being from one drop upwards, according to the age. It is only in the most extreme cases, when there is much pain, that opium should be given, and even then it should be in very small doses. If counter-irritants are to be had recourse to, which is doubtful, the most suitable are mustard poultices, or the spirit of camphor sprinkled on spongio piline, and closely applied over the stomach. The diet should be light and nourishing as soon as the little patient shows any inclination for food. If stimulants are required, the best is a drop or two of brandy in a teaspoonful of milk, or a little port-wine diluted with water.

(To be continued.)

ARTICLE VI.—*Ethidene Dichloride as an Anæsthetic.* By S. RUTHERFORD MACPHAIL, M.B. Edin.

THE following case is, I think, of value, inasmuch as the person to whom the anæsthetic was administered was himself a member of the profession, and therefore able to give a concise and reliable account of his sensations; besides this, he had on several occasions been under the influence of the three chief anæsthetics now in use, viz., ether, nitrous ether, and chloroform.

On 7th April 1879 the *ethidene dichloride*, or *æthyliden chloride*, as it is also called, was given to a friend, an ordinary drop bottle and a Skinner's inhaler being used, and we made the following observations:—

10.5 P.M. — Administration commenced, the pulse being 64, regular, and the respirations 18 per minute.

10.7.—Pulse 100, good. Talks quite coherently about his sensations, remarking that he felt his pulse decidedly quickening.

10.9.—Pulse 88.

10.11.—Pulse 84. Excited; speech mumbling; very slight action of muscles; appearance of face normal.

10.13.—Pulse 80. Quiet; limbs relaxed.

10.15.—Pulse 72. Completely under; administration discontinued.

10.17.—Pulse 64. Returning consciousness.

10.19.—Pulse 64. Recovered, and able to sit up and to talk without mumbling.

The pulse throughout was perfectly regular, and never flagged in the slightest degree. The quickening began with the first few inhalations, and slowed down to its normal rhythm very gradually. Respiration also was good and regular, never exceeding 20 per minute, and there was at no time the slightest embarrassment.

His recovery was rapid and perfect, and at no time afterwards did he complain of depression.

Personal Sensations. — Odour agreeable, though somewhat similar to that of chloroform. At first action of heart sensibly increased, with accompanying sensation of dizziness in head. This soon gave place to a generally pleasant hilarious feeling with subsequent gradually increasing numbness, extending apparently from feet upwards, and finally loss of sensation in lips (apparently). No suffocative sensation. On recovery slight nausea, but no marked desire to vomit, and soon passed off.

The anæsthetic was administered slowly in the usual manner, and the quantity given was $4\frac{1}{2}$ drachms. I am convinced that anæsthesia could have been produced in at least half the time had we not given it so slowly. But being an experiment it behoved us to use the utmost caution, and, on the least untoward symptom supervening, we were prepared to stop the administration, never being able to eliminate from our minds the possibilities of a coroner's inquest and its intelligent jury.

Since then I have given *ethidene dichloride* as an anæsthetic on six occasions, five being for minor surgical operations, in which the anæsthesia was not prolonged to any extent, and the sixth for the removal of a tumour, when the patient required to be kept under the influence for twenty-five minutes. In all the cases we got a uniform result—perfect anæsthesia, a regular pulse slightly quickened at the outset, quiet respirations, and the preliminary stage in the administration of muscular excitement reduced almost to a minimum, while the patients always retained their normal colour and appearance.

Only in one were there any uncomfortable after effects in the shape of vomiting or headache, and this was quite accounted for by the patient taking food shortly before.

The time taken in producing complete anæsthesia varied from $2\frac{1}{2}$ to 12 minutes, and the quantity perhaps a little more than is required when using chloroform.

In comparing *ethidene dichloride* with chloroform, and noting any advantage it may have over it, I should say that the former possesses the greater volatility and solubility, and to this appears to be due the rapidity of action of the drug and the subsequent rapid recovery, while, from its greater stimulant action on the heart as shown by the pulse, and its rapid elimination from the system, it is a safer anæsthetic to use.

I feel that my cases are not complete, as I was unable to procure sphygmographic tracings of the pulse, but as far as they go the results have been very satisfactory, and I give them for what they are worth.

The preparation used was manufactured by Burgoyne, Burbidge, & Co., London.

ARTICLE VII.—*A Short Sketch of the Recent Visitation of the Plague in Bagdad and its Vicinity, 1867–1877.* By JOHN WORTABET, M.D., Physician to St John's Hospital, Beyrout; Corresponding Member of the Epidemiological Society, London, and of the Medico-Chirurgical-Society of Edinburgh.

THE following sketch is chiefly drawn from a "Report on the Plague in the Province of Bagdad in 1877 to the Board of Health in Constantinople," by my brother Dr Gregory M. Wortabet, Inspector in the Turkish Civil Service,—a work which he intends to expand into a Treatise on the Plague.

I have also examined the official Consular Reports from Bagdad, and, to some extent, the literature of the subject both in ancient and modern times. But I have not aimed at anything more than gathering the main points of the case, so as to present a general outline of what is known at present of the plague; and it will be seen in the sequel that, though I have given some care to the study of the subject, there are still some topics which can be definitely settled only by further personal observation.

The report states that the plague first appeared in 1867 in Hindié, a district lying in the marshes which are formed by the inter-communication of the Tigris and Euphrates, not far from their confluence between Bagdad and Bussorah, after having been extinct in all that region for thirty-five years. It seems to have begun in the small village of Dûm, and then to have extended into other villages in the marshes, and finally ceased about the middle of June.

Its next appearance was in the winter of 1870–71 in the province of Mukri (Persian Koordistan), some 300 miles N.E. of Bagdad. It extended in the spring to Bana, about twelve hours' distance. My brother, who was then Sanitary Officer in Sulimanié (Turkish Koordistan), saw it, and states in his report that it was imported by the corpse of a man who died of it on his way from Mukri. The deceased was a native of Bana, and the body was brought into his house, where soon after his sister and three others took the disease and died. It then rapidly spread among the neighbours. But it appears that the vigorous measures which were taken to arrest its progress and to protect the adjacent country were happily successful, and the epidemic soon ceased. Since that date all that region has been free from it.

From 1874 to 1875 it seems to have become endemic in the marshes south of Bagdad. It began first among the cabins of the Arabs who live in the vicinity of the canal of Dagbara. The earliest victim was a man who gave it to his wife. The disease soon involved other members of his family, and from them was communicated to the neighbouring families, and then to the villages around. In November 1875 it appeared in Obara, a

hamlet about ten miles north of Hillah, which was soon after attacked. On the 13th of March 1876 the plague reached Bagdad.

The earliest notice of the plague which I can find in Her Majesty's Consular Reports from Bagdad is as follows:—"In April, 1875, an epidemic broke out in the marshes of the Euphrates, and Dr Colvill, of this agency, was deputed to examine and inquire into the matter. He visited Hillah, and travelled thence down the Euphrates to Bussorah, examining the sick on his way; the epidemic he pronounced to be veritable plague. This year it has been very rife at Hillah, and will doubtless acquire strength every year until it culminates in a great disaster. The disease, a malignant infectious typhoid fever, is bred and fostered in the marshes of Mesopotamia; indeed, that country in the course of a few years will for the most part become one vast marsh, unless something be done to guide the waters of the Euphrates into its own channel. The fact is, that the whole of the vast engineering scheme of the ancients for irrigating Mesopotamia has been so neglected that it will require the science of a whole decade to control the Euphrates, which now yearly discharges a great quantity of its surplus water into the Tigris about three miles below the city of Bagdad. The level of the bed of the river Tigris is much lower than that of the Euphrates, and its waters were made use of to irrigate Mesopotamia formerly. One point is quite apparent that, as regards this disease, until some scheme is set on foot for draining the marshes we shall have a yearly increasing mortality, and the danger of the disease spreading to India staring us in the face."—(*Reports from Her Majesty's Consuls, etc.*, 1876, p. 1005.)

The epidemic of 1876 in Bagdad began on the 13th of March. It was evidently very severe, but I have no materials from which to give the details of its history. The mortality from the plague telegraphed to Constantinople by the Quarantine Office is as follows:—

DEATHS FROM PLAGUE IN BAGDAD.

March 1876	.	.	.	.	120
April	„	.	.	.	1273
May	„	.	.	.	1151
June	„	.	.	.	105
					— 2649

SOUTHERN PROVINCE OF BAGDAD (CHIEFLY HILLAH).

March 1876	.	.	.	.	128
April	„	.	.	.	488
May	„	.	.	.	381
June	„	.	.	.	23
July	„	.	.	.	8
					— 1028
Total					3677

Between the epidemic of 1876 and that of 1877 there appears to have been an occasional case of plague in Bagdad—mild in character and rarely fatal.

In the autumn of 1876 an epizootic disease broke out among the camels of some of the Arab tribes in the vicinity of Bagdad, who killed them and ate freely of their flesh. All who did so, however, were more or less attacked by fever, abdominal pains, vomiting, and bubonic swellings in the arm-pits and groins. A few recovered, but the greater part died before the fifth day. In every case the cause of the disease was eating diseased meat,—in none was it attributed to contagion. The encampments in which it appeared, however, were, by a law which prevails among the Arabs of the desert, either isolated or had to move out to solitary places, probably to prevent infection among camels. The epidemic soon ceased, and the report, after a minute examination of the facts which were studied on the spot, concludes that the disease was not the plague, but a form of virulent fever produced by eating diseased meat.

About the beginning of December the cases of plague in Bagdad became better marked and more fatal, but they continued to be few and to have a sporadic character. In March 1877 the disease assumed a considerable degree of violence and prevailed as an epidemic. It reached its height between the latter half of April and the first half of May, after which it began to subside, and about the 30th of June ceased entirely.

The following abstract of the daily returns of deaths given in the Report are interesting. From 23d to 31st March, deaths from plague 36; other diseases 109; thermo. 16° to 26° C.

April, plague	892	other diseases	367	thermo.	17-31
May,	699	„	67	„	21-39
June,	13	„	119	„	34-43

The total number of deaths from plague reported by the Sanitary Office was thus 1640; but it is supposed that in some cases the real cause of death was concealed, and that no less than 2000 were carried off by the epidemic. It is supposed also that this number was equally divided between the Moslem and Jewish inhabitants of the city. The population of Bagdad is estimated at 50,000 Mohammedans, 30,000 Jews, and 2000 Christians; and of the latter, who had either left the city soon after the appearance of the epidemic, or isolated themselves in their houses, it is not known that there was one case of death from this disease.

Soon after the outbreak of the epidemic a large part of the inhabitants left the city, and moved *en masse* to the adjacent gardens or to more distant places. It is supposed that more than two-thirds of them migrated; and it does not appear that, among all this large number, there was a single case of plague. It is equally certain

that none of the different parties of refugees took the disease with them to the places where they went, except in one instance, a detailed account of which is given in the Report of Dr Sebastio, who visited the spot, verified the facts, and remained there until the extinction of the disease. The following *résumé* is taken from his Report:—

During the height of the epidemic in Bagdad a Mohammedan family left that city for Amara, a town of 6000 inhabitants, lying half way to Bussorah on the Tigris. Soon after their arrival three of them died of plague. They staid with some relatives of their own who lived in six tents in a garden lying opposite the river and town; and shortly after the disease spread among the thirty-six inmates of those tents. Twenty-seven of them died, leaving nine survivors only. Five others died within the town, and the infection then subsided. The total number of deaths was thus thirty-two, and the period of the epidemic was from the 1st to the 25th of April. The Report of Consul-General Nixon (*Consular Reports*, 1877, p. 1553) differs from that given by Dr Sebastio, but the weight of evidence appears to be clearly in favour of the latter.

It was observed during the epidemic that, with very rare exceptions, the houses that were attacked were low, damp, and dirty, and inhabited by the poorer classes. Thus the Jews, many of whom are poor, and all are filthy in their houses and habits,—and yet whose ordinary mortality is so low and their longevity so remarkable, that their case has puzzled statisticians,—are always the greatest sufferers from severe epidemics, and suffered most from this one. It was also observed that plague, after having been imported by a person, fixed itself at first in one family and then radiated to the adjacent houses, thus attacking one quarter after another. Isolated, or high and healthy spots, generally escaped with little or no loss of life. Remarkable instances of these facts are mentioned in the Report; but in all these respects plague does not seem to differ from the ordinary course of other epidemics except in one apparently well-established particular, namely, when a family or a group of families have kept themselves away from the influence of infection, they almost invariably escaped.

The Report strongly insists on the fact that plague is *highly contagious*, and on the necessity of adopting all those means which are calculated to limit the progress of the disease. It brings forward particular instances in which the disease was clearly propagated by direct contagion, and lays much stress on the immunity of all those who kept away from the focus of the epidemic, either by moving to other places or by shutting themselves up in their houses, and thus secluding themselves from the danger of infection. It points out the sanitary measures which were adopted during the epidemic of 1877—chiefly the evacuation of infected spots, removing the sick and contaminated out of the city into temporary barracks, and ensuring complete isolation by placing a cordon round them.

The writer believes that if these precautions be not taken, the disease may be taken to other places, and threaten to be the scourge of modern as it was of ancient times.

This is supported by the general opinion of the Board of Health among both eastern and western nations, by medical men who have witnessed the epidemic, and by striking facts recorded by authors who have studied its history. Many believe that plague has become all but extinct by the modern system of quarantines. On the other hand, some recent writers advocate the opposite view, on the ground that there is no sufficient evidence that the disease may be carried beyond those geographical limits within which it prevails as an epidemic (Egypt, Syria, and Turkey); that the present system of public sanitary regulations preclude the possibility of the spread of the disease; and that international commerce and communication are now such that quarantines cannot be strictly enforced, and can therefore act only as nuisances, without producing any good.

A general review of the whole question would show, that while the contagiousness of plague may hardly be denied, the separate topic of the utility or possibility of quarantines is a debatable one, which can be decided only by further close observation of the working of both systems. The weight of evidence, however, lies at present more in favour of the view taken by the Report and the Levantine Boards of Health. Nor should it be forgotten that the question has two distinct phases, as it may be studied in two such different places as Bagdad and London. What may be utterly impracticable or unwarrantable in the West may be wholly so in the East; so that though quarantines may be wisely exploded in Europe, where an epidemic is met by thorough sanitary measures, it does not follow that such a step can be deemed safe in the present state of Turkey, where the science of hygiene is so imperfectly known and carried out.

As to the *origin* of the epidemic, it is generally held by modern authors—and to some extent this is traditional in Syria—that the plague is endemic in Egypt; that it breaks out there from time to time with unusual virulence, and takes the form of an epidemic; that its real source is a peculiar exhalation from the swampy soil of that country, which first attacks the inhabitants of crowded, filthy dwellings, and is then communicated to others, and that the infection is transmitted to other countries by ships or caravans. The elder Dr Russel (Alexander) says that the visitations of the plague at Aleppo within the memory of his times, namely, the epidemics of 1719, 1729, 1733, and 1744, came each time originally from Egypt; and the later epidemics in Syria are always traced by the people to the same source. It appears, however, that this view of the case is modern, and arose from a limited observation of the disease during the last and earlier part of the present centuries. It fails to account for the cause of the recent epidemic in Mesopotamia and of other visitations in former times.

It is certain that the plague which appeared in 1867-77 in the provinces of Bagdad had a local and spontaneous origin. Indeed, it seems to be equally certain that there was more than one independent outbreak. For thirty-five years all those provinces and the whole of Syria had been altogether free from plague. Its appearance first in Hindié, where it became extinct that same year (1867), its next outbreak in Bana, more than 300 miles north of Hindié, where it had the same short history (1871), and its last manifestation in Hillah (1874-1875), from whence it was imported to Bagdad (1876-1877), show that there were three interrupted outbreaks, separated by wide intervals of time and having no immediate connexion with each other. These facts clearly prove that the plague took its rise from local causes, and the case becomes stronger if there be no mistake about three different and independent outbreaks.

Among these local causes I have already mentioned the marshy character of the region south of Bagdad referred to in the Report of Consul-General Nixon. This cause alone, however, is utterly inadequate to account for the generation of the plague, and we must therefore look out for more potent agencies, which, when combined, are sufficient for its production. Our present knowledge of the specific forms of disease germs is still so defective that we must fall back on the sagacious observations of early authors. In accounting for the causes of pestilential diseases they insisted strongly, and it appears rightly, on climatic changes, among which they enumerate an abnormal state of the season,—winds prevailing long from one quarter,—great and sudden changes in the temperature, specially heat and cold, dryness and humidity,—an unusual amount of moisture in the earth, with putrid exhalations from decaying vegetables and animal matters. They classified these causes into meteorological states of the atmosphere, and a peculiar state of the soil (telluric), and considered these deviations from the ordinary course of nature as portending pestilence, which is ushered in by an increased percentage of sickness and mortality, epizootic diseases among animals,¹ emigration of birds, meteors, etc.

They defined pestilence to be a vitiation of the air produced by unusual climatic influences or noxious exhalations, and affecting only persons whose state of health predisposes them to take the disease; and they believed that a combination of conditions in the air, soil, and hygienic state of individuals within a limited geographical area is a sufficient explanation of the spontaneous origin of a pestilential disease. Modern observers strike more deeply into the root of the matter, and assert that under the combined influence of some or all of these causes disease germs are produced

¹ Thus in the *Iliad*:—

“He first the mules and swift-legged dogs assailed,
Then venom’d missiles on mankind were hail’d.”

—Book I. 60.

which, each according to its specific genus, give rise to the different forms of epidemic diseases. They say nothing of its contagiousness or transmissibility, though they caution against going to infected spots, and one of them (Ibn Zakarya) insists on leaving the places where plague prevails, and on encamping in heights which are not exposed to winds blowing from that quarter. The precautions which they recommend as calculated to secure one from the danger of attack are a temperate and regular life, avoiding all excesses, fatigue, hunger, and exposure to the sun. To these they added the use of acidulated food, cooling drinks, ventilation of the houses, sprinkling the rooms with vinegar and water, and fumigating them with aromatic herbs, and staying at home.

The *symptoms* of plague, which are given in the Report and agree with the statements of other observers, are in general as follows:—The patient feels weak and unwell for two or three days before the actual invasion of the disease, which is indicated by a chill and fever, accompanied by pains in the loins, headache, delirium, vertigo, and vomiting. Early in the course of the fever one or more buboes appear in the arm-pit, groin, or parotid region. Later on a kind of carbuncle sometimes shows itself on some parts of the body. In fatal cases petechiæ of a dark colour appear a few hours before death. These symptoms are always accompanied by great prostration, and the general impression made upon careful observers is that plague is closely allied to, if not identical with, malignant typhus.

(To be continued.)

ARTICLE VIII.—*On a Source of Error in the Clinical Estimation of the Elongation of the Cervix during Labour.* By DAVID BERRY HART, M.B., M.R.C.P.E., Assistant to the Professor of Midwifery in the University of Edinburgh, etc.

(Read before the Obstetrical Society of Edinburgh, 23d July 1879.)

IN a communication to this Society, entitled "A Study of Two Mesial Vertical Sections of the Female Pelvis,"¹ it was pointed out by Dr A. R. Simpson and myself that, during labour, the pubic triangle—*i.e.*, all in front, and inclusive of the anterior vaginal wall—is drawn up. The proof known then for this was given fully in that paper, and need not be recapitulated here. Since then the fact of this elevation has been corroborated in an atlas by Professor Chiara of Milan, giving vertical sections of a woman who died in labour while the foetus was undergoing spontaneous evolution.² The plates show distinctly the elevation of the bladder above the sym-

¹ *Edinburgh Medical Journal*, April 1879.

² *La Evoluzione Spontanea sorpresa in atto mediante la congelazione.* Per il Professore Dominico Chiara, M.D. Milan, 1878.



FIG. 1.—Vertical section of Female Pelvis. *a*, vagina; *b*, uterus; *c*, rectum; *d*, bladder; *e*, symphysis. The dotted line shows peritoneum covering bladder, which is empty and below pelvic brim.

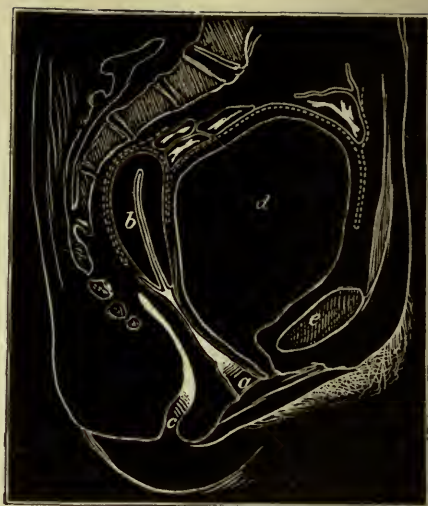


FIG. 2.—Vertical section of Female Pelvis where bladder has been over-distended. (Pirogoff.) The bladder is above pubis, but peritoneum still covers it.



FIG. 3.—Vertical section of Woman at end of Pregnancy. (After Braune.) The bladder, *d*, is below pubis, and covered with peritoneum.



FIG. 4.—Vertical section of Pelvis of a Woman in second stage of labour. (After Braune.) *a*, vagina distended by membranes; *d*, bladder above pubis; the dotted line shows peritoneum drawn off bladder.

physis pubis, the shortening of the soft parts below the pubis, and the greater thickness of the anterior uterine wall as compared with the posterior, just as in Braune's plate C.¹ The evidence on these points is all the more valuable from the fact that Chiara takes no notice of them in his text.

In the *Centralblatt für Gynäkologie* for 7th June, Litzmann of Kiel² relates a case where the Cæsarean section was had recourse to on account of threatened rupture of the uterus. In this communication Litzmann makes two valuable observations, without, however, explaining them. He notes that after the abdominal cavity and uterus were incised and the child removed, the summit of the bladder was seen four finger-breadths above the pubis. Although there was urine in the bladder (eine ziemliche Menge), its position was not due to over-distention, as it had been evacuated before the operation. But further, it was observed that the peritoneum was somewhat separated from the abdominal wall. Lastly, it was noted, on post-mortem, that the peritoneum was separated from the anterior wall of the bladder, which was elongated in form. This case clinically confirms what I had previously pointed out as to apparent over-distention of the bladder during labour.³

In this elongation of the cervix, then, we get the pubic triangle drawn up. The bladder is thus elevated, but owing to the firmer connexion between peritoneum and uterus than between bladder, abdominal wall, and peritoneum, the peritoneum strips off. After the pubic triangle has been so far elevated the cervix will yield more than it, and thus the peritoneum is completely drawn off the bladder. But it may be urged that the *distention* of the bladder may alone account for the *elevation* of it I have described. It does not, however, as I shall now show.

The bladder may be elevated above the pubis by distending it with water, or by distending the rectum forcibly. In these cases the bladder is pushed up, while during labour it is drawn up. The different causation makes a marked anatomical distinction. When the elevation of the bladder is due to a pushing up, the peritoneum is unaltered in its relations to it, as is seen in the plates published by Pirogoff, Legendre, Braune, and myself.⁴ If, however, we look at Braune's Tab. C,⁵ where the section is that of a woman in labour, then it can be well seen that the bladder is only tipped at its summit by the peritoneum. Litzmann thinks that the separa-

¹ *Die Lage des Fetus und Uterus*, etc.

² Kaiserschnitt mit temporärer Ligatur der Cervix durch den Esmarch'schen Schlauch wegen drohender Ruptur des Uterus bei hochgradiger Beckenenge und abnormer Resistenz des Muttermundes.

³ *Edinburgh Medical Journal*, April 1879, footnote, p. 902.

⁴ Pirogoff, viii. A. 32, fig. 20; Legendre, *Anat. Homolographique*, Paris, 1868, p. xvii.; Braune's *Atlas*, Tab. II., B.; D. B. Hart, *Edin. Med. Journal*, April 1879, fig. v. See also *Ed. Med. Journal* for Oct. 1878 for Dr Garson's paper.

⁵ *Die Lage des Fetus*, etc.

tion happens during pregnancy. At the end of pregnancy, however, the peritoneum still covers the bladder and lower part of the abdominal wall.

The physiological elevation of the bladder during labour differs, therefore, essentially from that caused by pathological distention or elevation by pressure from below, both in its causation and anatomical relations.

The practical point I now want to bring out to-night can be easily seen.

The cervix dilates, elongates, thins, and is elevated during labour. By palpation in the suprapubic region the band of separation between it and the uterus proper can be felt. This is the accoucheur's guide to over-distention of the cervix, and consequent rupture of the uterus. The height of this furrow above the symphysis has been generally taken as the guide to interference. This furrow, however, really indicates the thinning and elongation of the cervix *plus* the elevation of the pubic triangle, and thus in supra-pubic palpation a deduction must be made, which would be unnecessary, if the accoucheur could estimate the upper boundary of the thinning cervix at the sacral promontory.

ARTICLE IX.—*On the Unity of Poison in Scarlatina, Puerperal Fever, Typhoid, Diphtheria, Erysipelas, etc., etc.* By Dr G. de GORREQUER GRIFFITH, Senior Physician to the Hospital for Women and Children, Consulting Physician Accoucheur to St Saviour's Maternity.

IF it be contended that these so-called specific diseases require for their production in every instance the application in some way or other of a specific poison, so that no fresh case can arise, except from germs or noxious elements emanating from a person affected with the so-called specific ailment (as from the faecal excreta of a typhoid patient in the case of that fever), and that each stricken person must be preceded by another suffering similarly, I am led to ask, How then about the first case? Whence came it, how did it originate? That these various symptoms—to which are given for purposes of distinction the different names of scarlet fever, typhoid, diphtheria, erysipelas, puerperal fever—are at times originated *de novo*, and each and all from the same source or sources, is abundantly proved in the experience of every medical man, and, since this is proved, therefore also is proven their non-specificity.

I cannot but quote the opening words of Spencer Wells on the subject—"The relation of puerperal fever to the infective diseases and pyæmia," to show the definition and view of puerperal fever, and the relation of erysipelas and the infective (zymotic) fevers.

"After searching for an accurate definition of the term puerperal fever, or for some short description of this, as distinguished from other forms of continued fever, I have taken as the most accurate and comprehensive the definition from the nomenclature of diseases drawn up by a Committee appointed by the London College of Physicians—'a continued fever, communicable by contagion, occurring in connexion with childbirth, and often associated with extensive local lesions, such as peritonitis, effusions into serous and synovial cavities, phlebitis, and diffuse suppuration.'

"Here, then, we are led to the conclusion that, in puerperal fever, we have a contagious, continued fever, often associated with the important local lesions just enumerated—not always, but often. You may, according to this definition, have this contagious fever without these local lesions. The poison may be so potent, or the dose so large, that it may kill before there is time for the development of the local lesion; or the dose may be so small, or the poison so feeble, that it only produces some transient elevation of temperature, some greater rate in pulse or respiration, some increased action of skin, kidneys, and bowels, and the morbid material is eliminated before any local lesion is established"—a definition fully confirming the doctrine of unity of poison, differentiation of symptoms, while at the same time explaining the cause of differentiation. "But I must ask you to say, if, in your experience, you ever saw such a case which could not, on careful inquiry, be traced to exposure of the patient to some one or other of the contagious or infectious fevers, to scarlet fever or diphtheria, to measles or small-pox?"¹

If these diverse "specific diseases," as they are supposed orthodoxy to be, all produce the same result in lying-in women affected by them, viz., puerperal fever, of such a form and character that it bears no resemblance to the specific (?) fever, from which there is no doubt it has been contracted, is it not right to suppose that there is a unity of poison which will account for the same, or very much the same, phenomena occurring after, and directly consequent on, exposure on the part of those unable to resist the action of the virus?

"I need not remind you how these diseases are intensified or modified by the puerperal condition; and I proceed to ask if, in any case, where puerperal fever could not be proved to be really scarlet fever, diphtheria, measles, or small-pox, occurring in connexion with childbirth, it was not a traumatic or surgical fever, erysipelas, pyæmia, or septicæmia,—the local lesions, associated with the fever, assuming rather a primary than a secondary importance in the chain of sequence. Time does not permit me to enter on the very important practical question as to the sole dependence of erysipelas upon a specific marked poison. Whether this peculiar inflammation of the skin and cellular tissue, tending to spread

¹ This question is abundantly answered in my papers on this entire subject.

indefinitely, and preceded or accompanied by fever, can arise from the spontaneous generation in the human body of a poison communicable by contagion, or may arise independently of any poisonous influence from without.

"Erysipelas often attacks the parts concerned in childbirth, and the fever which accompanies it, intensified by the puerperal condition, is a very fatal form of one of the diseases confounded together under the term puerperal fever."

Farther on he speaks of "diphtheritic exudation on the mucous membrane of the uterus and vagina, especially on the place of the separated placenta," occurring during puerperal fever, and asks, "Is puerperal fever ever a simple traumatic fever, modified by the puerperal condition; or does it always and necessarily depend on the action of a morbid poison? Did you ever see a case of puerperal fever which was not really either a case of scarlet fever or measles, or some such infectious or contagious fever, or erysipelas? or traumatic fever, caused by the bruising or tearing of the parts concerned in childbirth, and the changes in the bloodvessels, blood, and lymphatics following the injury?"—causes developing in different women that differentiation of symptoms which is a cardinal point in view.

"In approaching the subject of puerperal fever, we feel," says Dr Leishman, "that we are approaching a subject with which we are in a great measure incompetent to deal." After saying "that the pyæmic or septic origin of many cases of puerperal has been fully established," he adds, "There are cases in which a patient in the puerperal state becomes the subject of diseases of specific origin. I may mention, as an illustration, scarlatina. A (puerperal) patient becomes infected with the specific poison of scarlatina. In the later history of such cases I have had a difficulty in discovering any difference between the cases which we may suppose to have a septic origin, and those from a specific poison. There is another class of cases in which it would appear as if the original symptoms were more those of a local inflammation (metritis, peritonitis, localized or general); in all these instances, whatever the initiatory symptoms may have been, in so far as my experience enables me to form an opinion, I have again a difficulty in separating those cases, as far as final symptoms are concerned, from those dependent on pyæmia or septicæmia.

"We have frequently been informed that these diseases are likely to be engendered by decomposing animal matters, from whatever source the decomposition may originally arise."

Dr Newman of Stamford said—"I was asked some months ago to see a woman supposed to be three or four months pregnant, she had been suffering for two months from hæmorrhage, had lost so much, and her general condition was so bad, that one felt the only thing to offer her a reasonable chance of recovery was at once to empty the uterus. This was done in the first instance by dila-

tation of the os uteri, then by manual removal of the fœtus and secundines. Within three days she had rigor, and subsequently all the symptoms of pyæmia. She had an abscess on the shoulder-joint, an abscess in the wrist, and not a few collections of matter in different portions of the body. That I should take as a type of cases where a morbid process—which we are satisfied to call puerperal fever, for want of a better term—had its origin in a direct local lesion, that may have been produced by enforced dilatation and the forcible removal of the retained material.”

I copy these words, because they so forcibly remind me of the suffering similar pyæmic conditions occasioned me after my last attack of scarlatina, and because they show an identity in the later symptoms of this woman with those existing in my own case, after scarlatina—said attack of scarlatina having been induced, it was supposed, from a man ill (in the fever ward of the Meath Hospital, Dublin) with what was termed scarlatina throat—there being no other manifestation of scarlatina save some slight feverishness and general malaise,—I being at the time run down with very hard hospital work, and with long hours at dissection, to both of which I attribute much of my illness at the time, the condition of the hospital and dissecting room atmosphere being favourable to septicæmic poisoning, and the production of symptoms, to which the name of scarlet fever is applied.

“Given a woman,” continues Dr Newman, “in whom all the processes—vital, nervous, circulatory, mental, if you like—are materially excited and altered from their condition of reasonable health, in that phase alone we have much to look for in the way of an explanation of the reasons why poisons that run a different, or at all events a slower course under more ordinary states of everyday life, run when they have to deal with a parturient woman a course of far more severity and far greater rapidity, and, unhappily, of far greater fatality. These circumstances do unquestionably seem to me to play a material part in predisposing the system to the virulent development of septic poisons, however they happen to be introduced.” This bears me out in the reasoning of my papers, that the same poison affects the same person differently at different times of life, and under different circumstances, and different persons differently, who are differently situated as regards their outward circumstances, and also their inward, owing to what we term individual peculiarities or idiosyncrasies.

Dr Braxton Hicks says:—“Some have said puerperal fever was erysipelas, diphtheria, etc.” (from the clinical or life symptoms), “after post-mortem examination, according as one or other appearance was more prominent, so it was considered the essence of the complaint; thus peritonitis, enteritis, phlebitis, etc., were considered the real disease, instead of being looked to as effect; these opinions prevented the observer from looking in the real direction, namely, to the clinical facts.”

Dr Braxton Hicks "found that out of 89, 68 had been connected with animal poisons—more than three-fourths; of these 68, more than half, namely 37, had been connected with scarlatina; amongst the remainder, erysipelas, diphtheria, and offensive state of the discharges were prominent." He would exclude those as not being puerperal fever at all, but the affections of which they bore the stamp, occurring in a lying-in woman. He then asks the momentous question—one bearing significantly on the "Unity of Poison" in those so called different ailments—"Where is the proof of the existence of a separate entity, such as is ordinarily understood by puerperal fever?" And the answer is also significant: "When you examine the symptoms belonging to the various classes, you will find that they all belong to the same class, the specific symptoms were in all grades of proportions in the several cases (differentiation of symptoms or resultant phenomena), and, generally speaking, the less the specific signs showed themselves, the more tendency was there to malignancy. This is well shown where erysipelas being the primary cause, the disease which followed would be more like the malignant puerperal, and less to erysipelas."

Dr Hicks does not see the unity of poison in those cases; the intercommunicability and interchange being strong proofs of it. I cannot but think it is obvious, and the following case which he cites is additionally confirmatory:—"A woman was taken with most malignant puerperal fever, and died about the third day. I could find no history of scarlet fever previously, but in a few days two of the children had malignant scarlet fever and died." This, to my mind, proves that the scarlet fever of the children was contracted from the malignant puerperal of their mother,—a fact, the occurrence of which I have referred to in a former paper; or, that mother and children contracted the so-called different affections from one common source, the poison being developed, and matured earlier in the mother, because of the peculiar state of her puerperal condition, more ripe for contracting, more ripe for developing, more ripe for maturing. He also adduces the following, which more remarkably confirms my views:—

"A lady had been delivered twelve hours, when feverish symptoms commenced; a pile, already inflamed, became very tender and painful; from this a blush spread something like erythema, but without any defined edge, and spread over her back. About the third day arthritic pains and swelling commenced, with delirium; these symptoms increased in intensity, and she died in great agony on the fifth day. As the symptoms began so soon after delivery, I could not help suspecting that it had its origin from without, as the symptoms arising from decomposing secretions commence from the third to the fifth day. I could not find she had been exposed to any exanthem. Her medical man had not seen a case for two or three months. The nurse was apparently free. I, however, told the medical man I thought he would have evidence

in the children. In about a week the eldest child had scarlet fever, and rapidly died; the second was then attacked, and shortly died; subsequently the baby was attacked, but recovered. In neither mother was there any specific sign of scarlatina." To this case my comments on the former are equally and more forcibly applicable. "Numerous cases I (Dr Hicks) have seen where scarlatina was in the house, and the mother had puerperal fever without any rash. In some of the other cases there were signs of a zymotic disease, yet they would have been overlooked had not care been taken, so masked were they by the general condition." "The same applies to erysipelas." "Looking over the whole cases, we are unable to distinguish the symptoms as a class, the one from the other (causes of origin he means being different), excepting when the specific symptoms are superadded. . . ."

(To be continued.)

MY PROFESSIONAL PEERS AT CORK.

A NATURAL desire to glean profit as well as pleasure between terms, led me, at the close of the University for the summer session, to attend the recent sittings of the British Medical Association at Cork. A medical student, as it seemed to me, might easily make a worse use of his vacation than that. At any rate, I saw no harm in escaping for a time from the scholastic habit of mind, which is necessarily somewhat restricted and circumscribed, and in indulging in the luxury of the freer questioning and the robuster criticism which obtain among those of the profession, who, while they have ceased to occupy the students' benches in the schools, yet remain, in the higher sense of the word, students. To the non-graduate eye, the period of vacation ordinarily presents itself, if I may be allowed so to speak, as the blissful period during which the professor ceases from troubling and the student is at rest. But, thanks to the British Medical Association, vacation has another and totally different aspect. It is a period during which schools exist for nothing so much as to afford convenient subjects against which to direct the anathemas of medical reform, and professors, ceasing to be professors, are no longer permitted to be didactic and dogmatic, but are perforce, if not by choice, argumentative. It is a period, in short, in which, as was happily expressed by Professor O'Connor at this same Cork meeting, such graduated medical students as zeal prompts and as opportunity permits, meet together to sacrifice whatever increase of knowledge each one may have attained in the past year at the common altar of science. It is a period, too, as the same gentleman put it, in which the old man enters into discussion with his younger brethren, claiming no consideration except what may be conceded to his knowledge, and, in this discussion, nothing is adopted merely because it is new, and nothing rejected for being old.

It may be objected that the atmosphere in which our elders live and flourish is perhaps too strong for weakly student constitutions, whose proper food is instruction and not criticism, and not inquiry and discussion, but a readiness to be taught and to accept. But I take it that, duly subordinated the one to the other, all these things are essential to the true student; and, having for a short time breathed my mental lungs in this more bracing climate, I feel confident that I shall not thereby be made more than normally impatient of the milder air of the class-room. This much, at any rate, as it seems to me, is certain, that for the young medical student who wishes to know something over and above the mere school-work of his noble profession—something, I mean, of the profession itself, and of the motive principles and aims as well as of the *personnel* of its professors—no more profitable experience could be had than that to be found in the annual meeting of the British Medical Association. To feel the pulse of an Association numbering as this does well on to 8000 medical men, is very much to feel the pulse of the whole profession; and this one may satisfactorily do at the annual meeting. A student's impression, derived from such a pulse-feeling at the Cork meeting, may not be of much interest, except, perhaps, to his fellow-students. It is in this latter hope that I am encouraged, however, to record them.

It was Talleyrand, I think, who impressed upon young *diplomâts* the absolute objection there was to zeal or enthusiasm; *surtout*, enjoined he, *point de zèle*. Now, if there was one thing more observable than another at the Queen's College during the week of the Association's meeting there, it was zeal—superabounding zeal. There was more than enough of it, in fact, to drive a medical Talleyrand to despair of his profession. It was written on almost every face, and beamed through every eye. It almost equally marked the mild and clerical-looking presence of the President, Professor O'Connor, and the rubicund, but withal keen, and the anything but clerical-looking face of Dr Falconer, the ex-President of the Association. Countenances, too, otherwise varying so very widely in expression as those of the President of the Council, Dr Carpenter, in scholarly bearing, and in clear and incisive address, the own brother of our own Dr Calderwood; of Professor Hudson of Dublin, whose address in medicine reminded me of the best manner of the late Professor Kelland; of Professor Sayre, the able President of the American Association; of Mr Savory, whose eloquence smacks strongly of New York, but who made the Cork meeting memorable by the manner of the address which he gave on his own branch of the profession; of Dr Waters of Bath, the veteran and gentlemanly champion of medical reform; of Dr Andrew Clark, the President of the Medical Section; of our own doctors Fergus and Littlejohn, and of the numerous other foreign as well as native professional peers who attended the meeting of the Association,—each and all of these countenances, to my mind, bore the unmistakable impress of that zeal against which the

prince of diplomatists laid the weight of his authority. But then, I am free to admit, doctors are bad diplomatists. To them—as witness Mr Savory’s attack on the antiseptic surgery of Lister—words have not been given to conceal thought. Zealous to learn—such of them, at any rate, as are worthy students of their high profession, and those of them certainly who are peers among their fellows—they appeared to me to be almost equally zealous to impart their learning for the common benefit. Eager to discover and to approve reliable grounds of opinion and methods of practice, they seemed to be equally eager to warn all concerned against conclusions which might be either premature or uncertain, and against practice which might be either injurious or unsound. A little attention, further, to the work of the meeting was sufficient to make it clear that this stamp of zeal was not a mere trick of the facial muscles, or a mere vain imagining on my part. Take, for instance, the manner in which the business of the Medical Section was conducted under the pleasant and powerful presidency of Dr Clark. Zeal was in this instance not a matter of expression merely, or of manner—it was translated into earnest and thorough-going work. There may have been somewhat of Dr Clark’s native and characteristic oratorical exaggeration, but there was at the same time a great deal of unvarnished truth in his declaration, at the close of a most interesting discussion on alcohol in fever, that he had never heard a better or more useful one in the course of his life. *Mutatis mutandis*, much the same kind of thing may be said of the other sectional meetings. In each and all of the sections was to be seen the same zeal transformed into active and earnest work. Nay, it needed only to look a little more closely into what was before one, to recognise plainly that this most successful meeting at Cork and the Association itself was of the like parentage. If the Association has no motto—which I am not sure that it has, and if it should ever think of adopting one, which it very wisely never will—then it might naturally enough take this one, “that knowledge may increase let zeal abound.”

A second over-mastering impression forced itself upon my mind at the Cork meeting, and that is an impression following naturally upon the first. Whence all this consuming zeal? Whence all the ardour in obtaining and in imparting professional knowledge, of which Dr O’Connor hoped so much in stimulating the younger men to the cultivation of the like virtues? Whence all the earnestness which have drawn men from so many different climes and nations—America, Italy, Germany, Switzerland, the Netherlands, and France, as well as our own three kingdoms—to Cork, to confer together in order that there might be community of medical knowledge and uniformity of medical practice throughout the world? These were questions irresistibly suggested by what was going on in the different meetings. And the answer as irresistibly suggested was, that all this zeal, and ardour, and earnestness, had their original, and their every-day renewed birth

in a very general and just sense of the nature, and worth, and rightful position of the profession to which all were proud to belong. Of "professional interests," so long as medical men are under the necessity of living by the exercise of their art, one would be foolish not to expect to hear something in a meeting of this kind. Accordingly, one did hear something of professional interests at Cork. But of professional interests, pursued or pushed to the detriment, or to the neglect or regardless of the public service and interest, I as a student of medicine was edified by hearing nothing. A newspaper man of considerable experience has more than once paid the British Medical Association meetings the just praise of being eminently practical in their aim and conduct. Called together to discuss a business-like programme, the members, he said, went about its discussion in a business-like fashion, as men having work to do and knowing how to do it. Even in its strictest acceptation, the compliment is one to be proud of. It carries with it, however, a still higher compliment. It pays the Association meetings the praise of working, in this practical way, to an extent and to a degree peculiarly distinguishing and honouring the medical profession, for the general weal. Thus if we take the programme of the meetings of sections, we find in it not one word about "professional interests." Sections we have, and sub-sections, and under each of these we have grouped quite formidable lists of papers and subjects for discussion. But each and all of these are given up to the consideration of the questions how best to prevent, or to alleviate, or to cure human suffering, both in its medical and in its surgical aspect. It is, in fact, just such a programme as one would look to find prepared by men possessed by a sufficient sense of the nature of their high profession, and a proper and unselfish desire zealously to conform themselves thereto, "Public interests" might be inscribed with perfect propriety over the doors of one and all of these sections, and within them "professional interests" find no shelter. Let me explain what I mean. In the section of Public Medicine, Doctors Henry Bennet, Clifford Allbutt, Berkart, Cuming, and Roberts, and such others as felt moved thereto, were given the opportunity—and several gentlemen availed themselves of the opportunity—to contribute new items of value to the common sum of medical knowledge "on the value of mountain air in the treatment of phthisis." And in like manner, the use of alcohol in fever, of tracheotomy in croup, and other questions, were opened for profitable discussion. In this, as in all the other sections, what occupied the attention was not the physician's rights, social or otherwise, but his duties. The venerable President of the meeting, Professor O'Connor, whose address was in many respects peculiarly happy, was perhaps most happy in his reminder, that the physician should always remember that, although he had not received any supernatural mission, he had yet received a trust attached to no other calling. He professed to be ready night and day to receive all

calls. The physician was always on duty, ever in actual combat against death and disease. There was, he added, a dignity without pomp associated with a humility and simplicity of character which the physician should possess, making him ever feel that society and his profession had a claim upon his conduct and actions. His ministrations were such that if he would only spiritualize his actions, they would raise him to the highest dignity among men. Dr O'Connor did not forget to impress upon his hearers the necessity of a full and ripe knowledge, on the part of the physician, to a successful prosecution of his profession. Medicine he characterized as the science of sciences, not only because of its being the most important, but also because every other science was instrumental to it. It was out of such a high ideal of the profession that the necessity of assemblages such as this at Cork had arisen; and I was strongly impressed with the conviction, that the work of the sections was, so far as well could be, the practical prosecution of this high ideal. Each member, as Dr O'Connor also pointed out, developed a particular branch of knowledge, and each in his particular section or sub-section contributed his ray to the common sun of medical knowledge—all to unite like converging rays of light to illuminate the path of the practical physician.

That portion of the proceedings which most nearly, perhaps, incurred the suspicion of display rather than of sound, practical work was that of the different addresses. But even here a strong sense of what was due to the profession, and even to themselves, secured the speakers against the temptation of running after mere oratorical effect. I have, I think, already sufficiently indicated that the presidential address was studded with gems of sound sense. Of Dr Hudson's address in Medicine, also, I have said enough, I am sure, to recommend both the man and the address to Edinburgh undergraduates, by recording the fact that both the one and the other brought to my mind pleasing memories of our own Kelland. Dr Fergus was unfortunately prevented from reading his own address in Public Medicine. It was, however, a valuable contribution to the practical solution of some very vexed questions of state medicine and control. Of Mr Savory's address in Surgery I find it difficult, even at some distance of time from its delivery, to speak with perfect calm. Whether the hearer agreed or did not agree with all that Mr Savory advanced, he would most probably be quite at one with the gentleman who, at the close of the address, exclaimed that it was worth coming all the way to Cork to hear. How far Mr Savory's position may be sound, or how far it may be unsound, I—a mere student—am not here going to venture an opinion. I should like, also, to have an opportunity, which I have not yet had, of reading his opinions calmly and dispassionately, and without the influence and glamour of his surpassing eloquence, before making up my mind upon them. But this much I would wish to be allowed to say, I recognise his address as a most important pronouncement in surgical opinion and prac-

tice, and I was more than happy in having had the good fortune to hear it delivered. The counter-blast blown by Dr Tanner, from the presidential chair of the Surgical Section, who recommended that Lister's method should be carried out in its entirety, will tend all the more to embarrass immature judgment. Similar practical value attached to the addresses of the sectional presidents. I should not like to say that I thought that all that was said in them was always right, and the best thing that could be said. Certainly, however, the speakers always appeared to me to be speaking under the same sense of duty and responsibility which I have already alluded to as guiding those who delivered the general addresses. Thus Dr Andrew Clark, in the Medical Section, must have been cracking a mild joke when he spoke as if he believed the delivery of his address to be a waste of the business time of the section. It was a truly valuable, while it was, like Mr Savory's, an eloquent contribution to the real aim and end of such meetings. My student's conception of the wide culture which should underlie the professional knowledge of the physician was, I must however confess, somewhat wounded by what I thought to be the over-utilitarian tone of part of what he said on medical education. I was glad, therefore, to have what I considered to be a corrective to this administered on the following day by Mr Savory. Perhaps, however, I was wrong in taking Dr Clark to mean anything more than to object to the elevating of such studies as those of botany and natural history to too high a position comparatively with other and more requisite subjects in the medical curriculum.

May I be allowed to refer to yet another impression which I received at the Cork meeting, and which I was glad to receive? This again, now that I have come to reflect upon it, naturally enough springs out of the high ideal of his profession held by the physician, and the great zeal with which he seeks to reach up to it. It is the characteristic forgetfulness of self with which the physician imparted to his professional brethren in the meeting whatever increase of knowledge, as the President expressed it, which he might have gained in the past year or, it may be, years. If there were in the other professions and occupations of the country no more desire than there is in the medical profession to patent every new discovery and process, then Mr R. A. Macfie's occupation of trying to unravel the tangled web of patent laws would be gone for ever. Thus, Professor Sayre has not only given the whole profession, and through them the whole civilized world, the benefit of his life's labours in the cause of good surgery, but, at this Cork meeting, he was there ready, and not only ready but happy, to exhibit his method of procedure. Dr Sayre's demonstration of the treatment of a case of hip-joint disease in a woman was an event in the meeting, and, as might have been anticipated, there was quite a general desire to be present at it. His, too, was a notable presence in the discussions which went on in the Surgical Sec-

tion. Drs Hirschberg and Weber-Liel of Berlin neither had any secrets of opinion nor practice to conceal from their fellows; and amongst others Dr Schuster, of Aix-la-Chapelle; Drs Bonnafout and Ballard of Paris; Dr Pacchiotti, of Turin; and Dr Turnbull, of New York, gave freely of their spécial acquirements in Ophthalmology and Otology to the profitable results of the discussions in these two sub-sections. Dr Cordes, further, of Geneva, and Dr Seguin, of New York, were men whom it was to a student like myself a pleasure to see and a profit to hear. Attending this meeting, and enjoying such opportunities to see and hear my professional peers—if I may be allowed so to style these men—was, as it were, to make me, a student, full of the profession, and to incite me to imitate, though it may be from a very far off, those professional qualities and virtues which, seen in them, had struck me as being worthy of all admiration.

The general meetings of the Association were to my mind no less instructive than the sectional gatherings. It was, if anywhere, in these meetings that the cloven-foot of professionalism would be seen. But here, again, if I may use the phrase without being misunderstood, the profession rose above itself. The very titles of the different committees, consideration of whose reports, along with the delivery of the general addresses, formed the principal business of the general meetings, are eloquent of what I mean. The Habitual Drunkards' Committee, the Scientific Grants Committee, the Hospital Out-Patient Reform Committee, the Committee on the Registration of Disease, the Committee on Medical Reform,—these are titles surely enough speaking more of self-sacrificing, earnest public work than of self-seeking professional effort. A perusal, too, of the report even of the Parliamentary Bills Committee will tell clearly enough the same honouring and honourable story. True it is that Dr Waters's Committee are fighting for a fuller legislative recognition and influence of the profession. This, however, as I take it, will be very generally admitted as a legitimate enough "professional interest" for which to agitate. If also such influence, when and to whatever extent it may be gained, shall be used along the same lines and to the same ends along and to which the associated profession is now working in this British Medical Association, no one, I should imagine, would be inclined to grudge it to them. Mr Ernest Hart's Parliamentary Bills Committee, it may be further admitted, was evidently working to some extent in the like "professional interests" groove with Dr Waters's Medical Reform Committee. But in this case also, I imagine, most people other than the ruling authorities of the Army Medical Department, will be inclined to agree with the editor of the *British Medical Journal*, that the abolition of the entrance examination would not, in the long run, be found advisable or advantageous in the interests either of the profession or of the public in general.

I have endeavoured, in this brief and necessarily imperfect way,

to record some of the things which, at this Cork meeting of the Association, occurred to me as being specially noteworthy to a student entering the medical profession. From the experience gained at the meeting I have, as I have tried to indicate, reaped advantage by recognising, as I had never yet been able to do, the nobility and dignity of this profession, and the worth and pure motives of the bulk of its professors. I should be fortunate, indeed, if I should be able to communicate this advantage to others.

STUDENT.

Part Second.

REVIEWS.

The Pathology of Mind : being the Third Edition of the Second Part of the Physiology and Pathology of Mind, recast, enlarged, and re-written. By HENRY MAUDSLEY, M.D. London : Macmillan & Co. : 1879.

DR MAUDSLEY has reason to be proud of the success of his work on the Physiology and Pathology of Mind, now published separately in two volumes. It gained him a great reputation in this country and in America, and has been translated into at least three foreign languages. On the Continent Dr Maudsley is regarded by many as the head of English "Psychiatrie;" and in Great Britain there is a school of psychologists who look upon him as a great philosopher, or rather the great philosopher, the man who gives an elegant and decided expression to their immature and vague materialism.

Such success is not to be won without merits. Dr Maudsley has got great literary ability, much knowledge of his subject, a keen insight into human nature, great powers of persuasion, forensic skill, and an imposing style, though he is somewhat too fond of long words and long sentences. He can see relations and analogies, and work them out in detail; but in our opinion he is wrong in the main, and leads men away from the truth. Dr Maudsley is a hard hitter and formidable controversialist; nothing brings a man quicker into notice, and nothing leads him more easily away from the right path. A man heated with dispute is a poor searcher for knowledge, as he discerns nothing that does not tend to help to confirm his own views; and so in this third edition we see that Dr Maudsley goes on in his own way, learning little from time, experience, or the objections of his adversaries, which he answers or passes over as suits him best. Dr Maudsley displays an ostentatious scorn for metaphysics or the introspective study of the mind. People are prone to dislike those from whom they have something to fear, and those to whom they owe a debt; and if metaphysics cannot answer him the questions he would ask, it can ask him questions he cannot answer.

We fancy most metaphysicians could lay Dr Maudsley's little fabric of materialism in ruins as easily as Don Quixote hacked down the figures in the puppet show. If there be no mind, can Dr Maudsley prove the existence of matter? Cannot all phenomena be resolved into modifications of sensation? And what right has a man who rejects introspection as a means of knowledge, and professes merely to study phenomena, to use terms like force, and law, and causation as the very turning points of his philosophy? As Grove observes, force is but a subtle mental conception, and not a sensuous perception of phenomenon. We never see forces, only phenomena, and the changes of phenomena. Force is a conception taken from what we observe of the activity of our own mind, and which we transfer to the outer world. Dr Maudsley has many conceptions and terms needful for the integrity of his fabric, which are quite as transcendental as the time-honoured cognitions of mental philosophy. An observer who studied the objects of his research through lenses, and reflected from the surface of mirrors, would be held to have little of the scientific spirit unless he carefully inquired into the refracting and chromatic power of his media; and shall we not do this of the mind, which is at once the eye and the mirror through which and in which all science is known?

Of course Dr Maudsley must now and then use the introspective method, and can do so readily enough when it helps his own notions. Take, for example, the superfluous theory of unconscious cerebration. We do not say that this can be established by mental introspection; for, as stated by Dr Carpenter, this notion shows a lack of analytical power, but assuredly it can never be proved without mental introspection, following the ordinary methods of metaphysics.

Dr Maudsley would think with more clearness if he would rigidly define his terms, and not use them in different senses. Take the following passage:—"We rightly look upon mind as the highest force in nature, but we are wrong to look upon it as a power outside of and above nature, self-sufficing, without relations of dependence or affinity; while looking up to the height of its noblest functions, we ought not to overlook the depths in which their roots are planted." But Dr Maudsley holds that mind is merely a function of the brain, whereas he talks of it being a force, and of the functions which belong to mind. A little further down he again speaks of it being itself a function. Then: "It has been observed that the suspension of ordinary consciousness may be more than momentary in certain so-called masked epileptic states, and that during its suspension the person, to onlookers appearing as if he were conscious of what he was doing, may go through a train of new and more or less coherent acts, which, when he comes to his natural self, he is unconscious of having done. Like the somnambulist, he has been in an abnormal state of consciousness, during which he acted as if he were another being, knowing not what he did, or, if he did know it at the time, not remembering it after-

wards. But it is most probable that he did not know it ; for what he does, although it may have method in it, is commonly inappropriate and foolish, and nowise called for by the external conditions of his surroundings, of which he seems unconscious." Now, in these cases it appears to us that the patient was really conscious of what he was doing—very deeply conscious indeed, his attention being so fixed that he lost knowledge of all the antecedent and parallel states which we generally bear in mind. A man who feels, hears, sees, or thinks must be conscious. The somnambulist concentrates his whole consciousness on one operation, forgetting his preceding situation, and overlooking all sensory impressions not bearing upon the operation ; and when Dr Maudsley speaks of him being unconscious of what he had done, he evidently uses the word unconscious in place of forgetful or oblivious.

The first two chapters on Sleep and Dreaming, and on Hypnotism, Somnambulism, and Allied States, are very readable ; and when we come to Chapter III., "On the Causation and Prevention of Insanity," we reach ground on which Dr Maudsley is well fitted to appear to advantage. Some of his remarks show a very acute and subtle power of observation ; for example—"Beneath the individual characteristics lies the family nature, so that it will happen that in two brothers whose every feature differs we perceive intuitively the family identity—a fundamental identity in diversity ; and, on the other hand, in two strangers, who are very like in features, we perceive intuitively a fundamental difference, albeit we cannot describe it in words."

Dr Maudsley's chapter on Consanguinity seems to us unsatisfactory. It is known that all the most recent researches on the subject of consanguineous marriages go to prove that consanguinity alone has no bad effect upon the offspring, and that when such sequences appear they are but the results of a double morbid heredity. Dr Maudsley only cites the observations of Mr G. Darwin, whose conclusions he puts aside in a very airy manner. He fortifies his own conclusions with the following remarks :—"Inasmuch as the wisdom of mankind is greater than the wisdom of any individual in any matter of common experience, where no special means of observation have been used, because the area thereof is so much greater, the numerous springs which feed it flowing into the common receptacle from all quarters and in all ages, I cannot help thinking that we ought justly to attach great weight to the prohibitions of intermarriages of near of kin, which have been made by all sorts of people in all times and places, they are apparently an argument of the universal belief of their ill effects. Amongst the lower races the range of prohibition is much greater than in the civilized world, extending to the most distant relatives by blood. Certainly the popular conviction now-a-days is, that such intermarriages are more prone than not akin marriages to breed idiocy, insanity, and deaf-mutism."

In our opinion, although the statistical sources of observation are not so numerous and exact as they might be, they much outweigh the vague popular impressions on which our author seems to place such great reliance, nor are the prohibitions against close marriages amongst different nations and tribes so wide and frequent as he believes. If Dr Maudsley, before writing this section, has not read the work of Mr Alfred Huth on the Marriage of Near Kin, he ought to have done so; nor do we think that he can fairly reject this writer's conclusions without replying to his arguments.

In discussing the influence of religion upon character, the author makes a very outspoken revelation of his own opinions. As we have no sufficient proof of the existence of a God, religion has no real basis, and is but an artificial, vague, and somewhat morbid state of feeling. This life is not a period of probation, but the only taste of being which we shall ever have. Free will is a delusion, our actions are determined by antecedents lying far behind us. We are the slaves of a destiny we cannot escape. We are not to be held responsible for what we do, since we could not possibly have done otherwise.

"It were a good thing," he writes, "if men could reach the same height of philosophy in contemplating the evil doings of their fellows who are not in lunatic asylums, if instead of being embittered by treacherous dealing, afflicted by evil speaking and slandering, soured by ingratitude, made revengeful by wrong, angered by stupidity, they could look upon such things as natural and inevitable events, much as they look upon the vagaries of insanity or upon bad weather, and be nowise disquieted by them." Thus, moral blame is quite out of place; punishment and dissuasion may indeed be used as a motive power upon human actions, but with the same passionless calculation as when we take water to put out fire, or apply fire to water to generate steam. Morality consists in finding out the "laws of nature" and obeying them. The consequences of our bad actions, if not seen in ourselves, will appear in our children or even in other people's children. Dr Maudsley has some "altruistic" notions, resting on uncertain foundations of our duty to sacrifice ourselves for the race; his chief personal aim is, by meditating on the vanity of all things, to reach "a passionless serenity of mind." He seems to hold that, by the continued process of evolution, a finer race will be produced, and to this his hopes turn. A life beyond the grave he regards as a delusion. When we die we return to the nothing we set out from. We believe that if Dr Maudsley's theories of fatalism and responsibility were logically applied to real life, their effects would be most pernicious. We have no room to trace this out here, but we advise those inclined to give way to such opinions to read the chapter in Butler's *Analogy* "Of the Opinion of Necessity considered as influencing Practice," in which he reviews the consequences likely to happen should a fatalist try to educate a child

in his own principles. In fact, Dr Maudsley himself acknowledges the impracticable nature of his own theory when he says—"I have often felt despair when I have been asked anxiously by such a one what books he should read in order to fortify his mind against insanity; for the hopeless problem presented was how to efface in a day the growth of a life—nay, perhaps, of a line of lives—how to undo a mental organization." As Dr Hack Tuke observes, the ennobling thing in the freedom of the will is, that it recognises that a man has some power over his own destiny. But we doubt not that in practice Dr Maudsley's intuition and good sense, bearing him away from his philosophy, will enable him to give useful advice how to prevent threatened insanity.

We see in Dr Maudsley a spirit impatient of falsehood, and darting flashes of scorn at meanness and hypocrisy, very different from the passionless fatalism which he advocates in other places. Unhappily, he has no right to upbraid the mean and base, and no wrath to come to menace them with, save the vague threat that they and their children may become insane. He sees very clearly the growing love of riches and material luxury, the frightful hypocrisy and sordid indifference to everything but wealth and appearance, so common with the trading classes; and because religion is unable to prevent this, he assumes that its influence on morals is slight. Well, a petty cheating tradesman, a Glasgow Bank Director, a match-hunting cadet of a noble family, is a despicable enough object; but we totally disbelieve that they will cease their evil courses in order to help on the evolution of the race, or to be rendered in any way uncomfortable by Dr Maudsley's predictions that they are likely to have children tainted with some inherent vice, insanity, or idiocy, especially as we doubt whether the learned doctor could give a scientific demonstration of his views on this point. We do not see clearly that the laws of nature, as Dr Maudsley reads them, viz., those of physiology, hygiene, and evolution, are a sufficient groundwork for a desirable moral code. On the contrary, Darwinism seems a ready scaffolding for a hard and merciless selfishness. Do unto others as you would be done by,—a very stupid motto indeed. How did the golden rule help us in the struggle for life? Nay, rather, let us crush the weak, for it is good for the strong to prevail. Force and fraud have brought us so far in the struggle for existence and the path of evolution, and may yet bring us farther. Riches will save us and our children from care and worry and toil, and so let us get rich. To tell us that the pursuit of wealth is a cause of degeneracy of race and insanity, is a mere bugbear. Poverty is one of the most powerful causes of insanity and ill-health. To keep in front of the race of life, one must have money. Men no longer fight for the finest females, but they can buy them. Those who have made themselves advocates martyrs, and champions of the cause of the vanquished and the weak, were fighting on the wrong side; they are dead, and their mouths are stopped with

dust. Such might well be the marrow of Darwinian morality. The following sentence from the book seems to express the confession of a soul naturally truthful and outspoken:—"Let him feel, as well he may, that the play of human life is a dreary farce, that he and his fellow-workers are but a little higher than the brutes, and like the brutes will soon perish everlastingly—that all in the end is 'vanity and vexation of spirit,' he must still feel and work with his kind if he would have health of mind."

To live a good life, to conquer great and secret temptations, to have a real basis for morals, to have a creed logically consistent with healthy action, and which satisfies the hopes and aspirations of man, we need God, liberty, and immortality, and the conviction so deep in the human breast that we shall be held responsible for the deeds done in the body. A mind which wants those is in an unhealthy condition; and a society without them has a canker within its bosom. Religion is a natural, not a morbid feeling of the mind, and all history proves its enormous power in human affairs.

Dr Maudsley's chapters on the Symptomatology of Insanity do not call for any especial remark. In common with most authors on the subject, he is obliged to use the old mental classifications of mania, melancholia, and dementia, along with others formed on a clinical basis, such as general paralysis, and epileptic and puerperal insanity.

The chapter on the Insanity of Early Life is little altered from the first edition; Dr Maudsley's treatment of the subject shows great powers of observation and generalization.

Of the 32 pages assigned to the Morbid Anatomy of Mental Derangement, 12 are devoted to an explanation why frequently no lesions can be discovered after insanity. Dr Maudsley does not explain that this may also be the case in idiocy and imbecility. His account of the lesions in this form of mental deficiency is incomplete, and the elaboration of selected details to show that there is a rude reversion of type in the brain and the habits of the idiot towards that of the ape, indicates a hankering after the refuted theory of Vogt, who would make out that microcephaly was a reversion to the Simian type of brain. The statement that there are only ten cases of deficiency of the corpus callosum on record, and the whole note on this deficiency, is much behind date. Twenty-five cases instead of ten would have been nearer the mark. We advise Dr Maudsley not to repeat the assertion of Liebreich about pigmentary retinitis being common with the offspring of marriages of consanguinity, and with people of limited mental powers, until further confirmation comes. These, however, are mistakes of no great consequence, and it is more the fault of the subject than of the author, that this chapter, though carefully compiled, is difficult to read, and leaves only a vague impression on the mind. The want of engravings is a disadvantage.

In the first edition of the *Physiology and Pathology of Mind*, the chapter on the Treatment of Insanity was the weakest in the book. It seemed hastily put together, and was wanting in fulness of detail. The chapter in the present work, double the length of the old one, is really excellent. It is clear the author's views on treatment have been modified by his practice; for example, he is much less favourable to the use of narcotics in insanity. "As regards the use of sedatives for the purpose of aiding to bring about recovery in acute insanity, my experience," he tells us, "is, that while their occasional use may be necessary and beneficial, their repeated use day after day and night after night is unquestionably injurious—promoting death or dementia. And I am not sure whether they ever produce a beneficial sleep except in cases in which, with a little patience, sleep would have been obtained without them."

On the whole, this is a book in which there is much to admire, though there are things of which we cannot approve. It is very readable, and causes one to reflect. As the best exposition of the views of a school of thought which numbers a good many disciples, it ought to be studied by those who wish to hear both sides of an important question.

The Dissector's Guide; being a Manual for the Use of Students. By D. J. CUNNINGHAM, M.D., C.M., F.R.S.E., Senior Demonstrator of Anatomy, University of Edinburgh. Illustrated by J. Dunlop Dunlop. Part I., Upper Limb, Lower Limb, Thorax. Edinburgh: Maclachlan & Stewart: 1879.

It might be supposed that no manual was less needed than one on practical anatomy, but such is far from being the case, and we gladly welcome this *Dissector's Guide* by such a competent writer as Dr Cunningham. Most of the popular dissecting books in present use have been written by surgeons instead of by professional anatomists, and are too slight in character and wanting in accuracy to satisfy the thoroughgoing student, while the well-known work of Prof. G. V. Ellis, which in its several editions has evoked the groans of successive generations of students, is so prolix, cumbrous, and obscure, as well as so repulsive in style, that nothing short of the necessity for accurate and full information has secured its long supremacy. In all of these books the directions to the student for the performance of the dissections differ from the methods followed in Edinburgh, and are wanting in fulness when not otherwise objectionable. Dr Cunningham seems to have started with the idea of furnishing a book of directions to be used in conjunction with one of the dissecting manuals, but he must soon have felt the difficulty of separating directions from descriptions, and perceived

the objection to burdening the student with two books. Part I. now published contains the guide to the portions of the body usually first dissected by junior students, and the description, especially of the upper extremity, is not sufficiently full to render them independent of other manuals, though the directions as to what should be done and what observed are admirable. We hope that Dr Cunningham will incorporate a larger amount of description in the second part, and so render his manual complete in itself. The diagrams are noteworthy, especially those of the surgical regions, which are simple and telling as well as novel. The more elaborate figures do credit to Mr Dunlop's artistic power as well as point out the proper lines of incision. We observe that the diagram of the brachial plexus differs from the ordinary one of the books, and figures the arrangement described by Dr Cunningham himself and by Mr Lucas (*Guy's Hospital Reports*, 1875) as being the one most frequently observed. In this diagram the lesser internal cutaneous nerve is represented as mainly derived from the 2d dorsal. We think that in a book of this kind it would be an advantage if alternative modes of dissection were described. Every examiner must know how put out students appear when shown a part dissected in a different way from that to which they are accustomed, and how often they are deficient in practical acquaintance with structures at the boundaries of the arbitrary parts into which the body is allotted for the purpose of dissection, and where the dissectors of adjoining portions more or less interfere with each other. Hence the value of having a few subjects allotted to senior students in a different way from that customary, and the occasional performance of dissections in reverse order. The students of the present day, with such clear directions, easy style, good print, and get-up as Dr Cunningham gives them in this manual, can have little idea of the drudgery undergone by their predecessors when learning anatomy.

Archives of Medicine: a Bi-monthly Journal. Edited by E. C. SEGUIN, M.D. Vol. I. No. 2. April 1879. G. Putnam's Sons. New York.

WE welcome the appearance of this journal, intended as a continuation of the *Archives of Scientific and Practical Medicine*,—brought to a close because its principal editor Dr Brown-Séquard was unable to conduct it, from his continued residence in Europe,—and the *American Clinical Lectures* conducted on the plan of Volkmann's *Vorträge*, which ceased to be issued last year. The part before us opens with a well-written article by Dr A. H. Smith of St Luke's Hospital, on "Supplemental Rectal Alimentation, especially by Defibrinated Blood." When the stomach is inactive or feeble, three modes are made use of to improve by its means the nutrition of the

body: these are the use of easily assimilable foods, of tonics, or of artificial digestive fluids. To these last belong "pepsin, in its myriad forms, pancreatine, and lastly ingluvin, prepared from the gizzard of the domestic fowl, and five times as strong as pepsin; and we may prophesy with confidence that ere long we shall find upon our tables illuminated circulars, in the highest style of decorative art, announcing a new preparation, fifty times as strong as ingluvin, made from the gizzard of the ostrich." The rectum possesses an advantage over the stomach, inasmuch as it simply absorbs the fluid material presented to it, without digesting it, and on this ground Dr Smith advocates defibrinated blood, as containing within itself just what is wanted ready prepared. A number of cases in which it had been employed with benefit, alone or in conjunction with more ordinary means, are cited, and the paper concludes with a series of deductions drawn up by the Committee on Restoratives of the Therapeutical Society. Another practical paper is one on "Obstinate Ulceration of the Neck of the Uterus cured by Grafting." There are numerous other articles of a more or less generally interesting nature, and the magazine, which is well printed, is destined to take a good place among medical periodicals.

On the Nature of Life: an Introductory Chapter to Pathology. By RALPH RICHARDSON, M.D. Edin., M.A. T.C. Dublin, Fellow of the College of Physicians of Edinburgh. Second Edition. London: H. K. Lewis: 1879.

THE first edition of this work was much smaller than its successor, and bore a different title—*The Simplicity of Life*. We are doubtful if the new title is an improvement, because it raises expectations which are not fulfilled. The volume is a small quarto of 328 pages. The paper is luxuriously smooth and thick; the letter-press beyond all praise. We feel very much at a loss what to say regarding the contents. The subject is recondite and difficult. There is a formidable array of authorities—some of world-wide reputation, the luminaries of bygone centuries, others barely heard of in our own day, with its magazines, newspapers, and societies—but, after all, there is very little outcome of definite opinions, theories, and statements; there is great confusion of language as well as of thought, and little attempt made, so far as we can see, to gather up the miscellaneous materials into a tangible, well-pondered, reasonable conclusion. The author himself is evidently more than once impressed with the truth of this criticism, and relieves himself by making sensible quotations which, if attended to, would have disarmed it. We refer the reader to p. 163, where Dr W. T. Gairdner, with his usual clearness and force, makes some interesting remarks on the Brunonian system. And we shall conclude this short notice by quoting a passage, p. 144, from the illustrious

John Locke *On New Meanings of Old Words*:—"In this abuse the schools have been most remarkable, and have done philosophy the greatest injury. The absurdity of their doctrines necessarily led to this, for there is no more effectual way of defending strange and absurd doctrines than to guard them round by legions of obscure, doubtful, and undefined words, which make these retreats more like the holes of foxes, or dens of robbers, than the fortresses of fair warriors; which if it be hard to get them out of, it is not from the strength that is in them, but the briars, and thorns, and the obscurity of the thickets which beset them. Neither is there any ingenuity displayed in this abuse of language, no more than there would be in writing a book, in which the signification of the letters of the alphabet should be changed, A for B, and B for A, D for C," etc.

House and Home: A Journal for all Classes. Sanitary House Construction, Overcrowding, Improved Dwellings, Hygiene, Building Societies, Dietetics, Domestic Economics.

WE have received two monthly parts of the above journal, the contents of which are sufficiently indicated upon the title-page. If the standard of quality and interest reached in those numbers can be maintained, it will undoubtedly prove a valuable accession to our popular literature.

WE have received several numbers of an American journal which commenced its publication rather more than two years ago. We have to apologize for not having noticed sooner this *The Quarterly Journal of Inebriety*, but with a press of matter on hand some things will now and then be forgotten. However, owing to the accumulation of numbers before us at present, we are able to give our readers a better idea of the scope and merits of this journal.

The publication is the organ of the American Association for the Cure of Inebriates, and is purely scientific in its objects, being devoted to the study of inebriety and the publication of the results of treatment of inebriety in the asylums set apart for their management.

The American Association has long ago arrived at a point which our legislators on this side of the Atlantic have not yet begun to understand, namely, that there is a disease (called in America "inebriety," and by the distinguished head of our profession here, Sir Robert Christison, "drink-craving") which is perfectly distinct from the vice of drunkenness, and which requires to be treated, and can be cured at present, only in retreats, homes, or asylums specially provided for the purpose.

From this statement we trust that the aim and object of the journal to which we shall now refer will be thoroughly understood.

The various articles which appear in this journal are of great interest, and we wish it were possible to give extracts from all of them; as it is, limited space compels us to content ourselves with the leading ideas brought out in the journal as a whole, and the most important facts that are mentioned by the various contributors. The general opinion of the writers in the journal (who are superintendents of, or otherwise connected with, inebriate asylums) is that the disease inebriety is on the increase; that it is very frequently hereditary; that it is closely allied to epilepsy, mania, and other nervous affections; that it is often associated with epilepsy; that its markedly periodic character points still more to its nervous morbid origin; that it may be the result of indulgence in the vice of drunkenness, or appears more or less suddenly without any special previous training in drinking practices; that it is more common in the upper than in the lower classes (drunkenness being more common in the latter, the explanation given being that the muscle-workers escape while the brain-workers are more liable to suffer); that the hereditary disease is less curable than the acquired form, and that there is no chance of cure for the afflicted sufferers but forced confinement for a period which varies generally according to the length of time that the disease has lasted. Unfortunately, permanent cures seem to be very much rarer than they ought to be; but this is easily explained by the many temptations which beset and assail the poor victim the moment he leaves the asylum, where he had lost all traces of his disease for the time. We find that there is no permanent cure, therefore, except where total abstinence is maintained after the patient leaves the asylum. Still, there is universal testimony to the benefit which the poor inebriate receives from being placed in these asylums. If there were nothing else, he is at least prevented from becoming worse, and indeed it seems the only chance he has of recovery or of life. As one writer puts it, "Isolate and quarantine him, make him self-supporting, diminish his power of spreading this disorder and bringing ruin on others as a result of this wretchedness, and the wealth of the state is largely increased, the happiness of its citizens enhanced."

In arguing for the establishment and maintenance of such asylums throughout all the States, the same writer asks why a large percentage of permanent cures should be demanded, or (he very properly argues) is such a condition required of asylums for the insane? and were asylums for the insane unable to show a single case of recovery, would they on that account be shut up? And if such places are necessary even irrespective of the amount of cures effected, equally so are the asylums for the inebriates.

We have been greatly interested to find that moral and religious influences are mentioned by several writers as powerful if not essential elements in the bringing about of a permanent cure. In the asylum the inebriate learns that he can do without liquor, gets over his crave for the time being, recovers some (at any rate) of his power of self-control, and if to that can be added a conviction that,

by the support of God's grace and the practice of rigid abstinence alone, he is safe from falling, his cure, in the opinion of most writers, is considered accomplished.

Few if any who have been in these establishments are considered capable of taking alcoholics again with safety, even in moderation. None are looked upon as safe from relapse (according to some writers) who have not come under the influence of the grace of God, and learned that their only hope and security is in a strength not their own. It is very cheering to find recorded that many cases which came under treatment left these establishments with good hopes that they had become new creatures under the influences there brought to bear on them.

Now that we have got our Habitual Drunkards' Bill (such as it is), we fondly hope that such and even more encouraging may be the results of the establishment of homes and retreats in this country.

WE have received the July number of the *Medical Temperance Journal*, which contains, among other most interesting matter, a paper by Dr Norman Kerr on the bark cure for drunkards, which has been so extensively advertised and circulated lately in some of our best periodicals, more especially the religious ones. We would take this opportunity of protesting against the manner in which professedly religious publications make themselves the medium of medical advertisements, which are not as a rule harmless. These advertisements may be, and doubtless are, very remunerative, but we think a religious paper should be above such sordid inducements and questionable means of support. Dr Norman Kerr, in the paper before us, attacks the so-called bark cure, and easily overthrows it. He says, "Red, pale, and yellow cinchona barks, quinine, and other similar medicinal agents, are of great service in aiding to restore the broken tone and power of the shattered mental and physical constitution of the hapless dipsomaniac. But these are not always even of temporary service. Very often every one of them fails in arresting, even for an hour, the uncontrollable abandonment to alcoholic indulgence. That a sanitary application, however healthful—that an article of diet, however nourishing—that a drug, however powerful—should fail in the vast majority of instances to prove of any avail in the rescue of the intemperate, is what every thoughtful and accurate scientific observer would expect."

Unfortunately for drunkards and their anxious friends, we can confirm Dr Norman Kerr's opinion as to the bark cure. Having been pressed by the friends of an unfortunate to try this new remedy, about which so much was being said and written, we administered the remedy exactly as directed in the publications. We found the red bark a good tonic, but nothing more. Our patient visited us some time after convalescence, with a powerful odour of alcohol about him, and we have ascertained from his

distressed friends that he is pretty much where he was. We have been informed by several of the principal druggists of this city, that there has been recently a great demand for the red-bark cure for drunkards. We are inclined to think the whole thing has been another American dodge—and a very clever one. Some lucky purchaser of red bark has started the story as an advertisement, and doubtless has made his fortune thereby.

The moral is a sad one. We have another proof of how many habitual drunkards we have in our midst. Surely the new bill has not passed a day too soon.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LVIII.—MEETING IX.

Wednesday, 4th June 1879.—Professor SANDERS, *President, in the Chair.*

I. *Dr P. H. Watson* showed a CYSTIC SARCOMA removed from the groin. It had been two years in growing, and had given rise to considerable discrepancy of opinion among the various surgeons who had been consulted about it. It did not compromise the abdomen; but the question practically was whether or not the femoral sheath was so implicated as to forbid operative interference. On removal, it was found adherent to the sheath, which was therefore partially taken away. The tumour seemed pigmented, but this was really due to altered blood-colouring matter. Some of the cysts contained dark-coloured fluid. *Dr Hamilton*, who had examined it, reported that it was a myeloid sarcoma. The giant-cells were numerous and large. The cysts had evidently been formed by hæmorrhages. He believed it to be of a very malignant nature. *Dr Watson* himself thought that the length of time it had been growing, the fact of its being encapsuled, and its entire removal, pointed to a favourable prognosis for the patient's immediate future.

II. *Dr Byrom Bramwell* then read a paper on the PATELLAR TENDON REFLEX. After referring to the previous observations of Erb, Westphal, Grainger Stewart, Buzzard, Gowers, &c., the author proceeded to consider the physiology of the subject. He gave reasons for supposing, firstly, that the movement of the foot, which follows a sharp blow upon the ligamentum patellæ when the knee is semiflexed and the leg at rest, is not mechanical, but is due to a contraction of the quadriceps extensor femoris; secondly, that this contraction is a reflex phenomenon. He concluded that in the

normal condition of things, the sensory nerves which receive the impression and convey it to the centre (lumbar portion of spinal cord) are situated in the ligamentum patellæ itself, but that in some cases of disease—where the phenomenon is greatly exaggerated—the reflex may originate in the muscular fibres of the quadriceps ; in the periosteum, as when a contraction follows a blow on the front of the tibia ; or possibly in the skin over the patellar tendon. Two cases were detailed in support of the possibility of the skin origin of the reflex ; in one the phenomenon followed a blow upon a pinched-up portion of skin, notwithstanding that every care was taken to prevent any dragging on the tendon ; in the other the phenomenon was greatly lessened after freezing. The patellar tendon reflex, like the ordinary skin reflex, varied greatly in extent in different individuals ; but the author had not seen any case in which it was completely absent in health ; several cases, however, had been met with by Gowers and others. The writer then considered the alterations of the phenomenon which are met with in disease, dividing these cases into two classes: (1.) Those in which the phenomenon is absent ; (2.) Those in which it is exaggerated. Anything which impairs the integrity of the nervous arc will prevent the occurrence of the reflex. Disease or injury of—(1) the sensory nerve fibres, conveying the impression from the surface to the centre ; (2) of the nerve centre (lumbar portion of spinal cord) ; (3) of the motor nerve, which conveys the impression from the centre to the muscle, by causing an arrest of the reflex, will prevent the phenomenon. Practically, the arrest generally occurs in the centre (lumbar portion of cord), for disease and injury of the cord are of every-day occurrence, while disease of the nerve trunks and anterior roots is rare. All lesions of the lumbar portion of the cord will not prevent the phenomenon—that particular portion of the cord through which the reflex travels must be injured or diseased. The author then referred in detail to individual diseases in which the phenomenon is absent. He stated that in the great majority of cases of locomotor ataxy the phenomenon was absent. In that disease the arrest must either take place in the posterior root fibres or in the posterior horns of gray matter. The posterior columns are outside the reflex tract ; the lesion of the posterior columns cannot, therefore, cause the arrest. In the great majority of cases of locomotor ataxy the lumbar portion of the spinal cord is diseased, hence the frequency with which the patellar tendon reflex is absent in that affection. Cases in which the patellar tendon reflex is exaggerated were next considered. Increase in the extent of the phenomenon may depend upon—(1) increased excitability of the gray matter of the cord ; (2) disease or injury of the cord interfering with the fibres which transmit the inhibitory impressions from the brain. These inhibitory fibres of reflex impulses are supposed to be contained, in part at least, in the lateral columns. Disease or injury of these (the lateral) columns will therefore be associated with increased patellar tendon reflex.

Several interesting cases were described in support of the various points advanced in the paper.¹

Professor Grainger Stewart thought that all of them must be gratified at hearing this the first paper which Dr Bramwell had read to them as an Edinburgh practitioner. It was a matter of congratulation that they now had such a good and diligent worker among them here. Dr Bramwell's paper gave an excellent *résumé* of the chief points now known about patellar tendon reflex. These were almost identical with those he himself had brought before the Society on a previous occasion, and more fully expounded in a clinical lecture published in the *Medical Times and Gazette* about eighteen months ago, and with what Erb and Westphal had originally discovered. The additional cases he had seen since then confirmed the accuracy of the general statements made by these authors. With regard to additional experience acquired since he had last spoken of this subject before the Society, he would refer—1st, To those cases in which the patellar tendon reflex was diminished; and 2d, Those in which it was exaggerated. As to the first group, he had met with no undoubted case of locomotor ataxia in which the "tendon reflex" was retained, but one or two in which some of the symptoms existed while it was retained. He had not been able as yet to satisfy himself of the value of the loss of tendon reflex as an early symptom. He supposed that its disappearance depended upon lesion of the portion of the spinal cord which was the *centre* for that reflex movement, and that the symptom might appear early or late according to the distribution of degeneration in the cord. He had, however, met with one or two cases in which full confidence in this symptom would have or might have led into error. In the case of a gentleman, which had been some years ago narrated to the Society as an example of malarious paraplegia (see *Ed. Med. Jour.* 1876), a relapse had occurred during the last summer, and some symptoms resembling those of locomotor ataxia had been developed. The patellar tendon reflex was found completely absent in both legs, but in the course of a few weeks improvement set in, and the tendon reflex was restored. In this case adherence to Westphal's diagnostic rule would have led to a diagnosis of locomotor ataxia. He had seen the same condition also in the case of an Irish lady who had few other symptoms of locomotor ataxia, and absolute loss of the symptom had been observed in a well-marked case of polio myelitis anterior subacuta, which had been carefully demonstrated to the clinical class. As to the second group of cases—those in which the function was increased—he had seen it very marked in cases of secondary degeneration of the cord following upon cerebral lesion, as well as in cases of primary lateral sclerosis. Further, in one well-marked case of spastic paralysis following upon Pott's disease of the vertebræ, he had found it greatly exaggerated. Sometimes the exaggeration led to

¹ The paper will shortly be published in full in the *Medical Times and Gazette*.

prolonged exhaustion, when the tendon was repeatedly tapped; and sometimes the traction upon the flexors led to a spasmodic contraction. He agreed with Dr Bramwell as to the point of origin of the peripheral irritation being in the tendon, and remarked that some parts of the tendon were more sensitive than others.

Dr Brakenridge mentioned a curious case recently sent to him as one of locomotor ataxy. The patient was a shepherd, who, eighteen months ago, began to suffer from lightning pains in the knee-joint, girdle pains, and inability to walk. Sensibility was lost greatly, there was erroneous location of sensation, no reflex action on tickling soles and patellar. Tendon reflex exaggerated.

The President expressed the pleasure he had in listening to Dr Bramwell's paper. We were only now at the commencement of our knowledge of spinal disease. His own experience was that, in locomotor ataxy, patellar tendon reflex was absent. He had seen doubtful cases, but had never seen a case of locomotor ataxy with the tendon reflex present. Cases of rigid paralysis, which was the name he used to give to those now called spastic paralysis, were not uncommon, and in them the tendon reflex was distinctly exaggerated. More accurate clinical observation would enable them to differentiate different forms of spinal disease, at present confounded together. Even on the street, the distinctive walking of patients with spinal disease was such as to attract attention. The difficulty in such cases was, that they were not immediately fatal, and thus post-mortem examinations most rarely obtained.

Professor Stewart wished to draw the attention of the Society to the resistance, in cases of spastic paralysis, to rapid passive motion. One of the house physicians in the clinical wards, Dr Strang, had made some observations on the forms of walking in spinal disease. One characteristic form he had aptly named the piper's strut.

Dr Bramwell thanked the Society, and Dr Grainger Stewart especially, for their kind reception. He hoped he would be able to justify their praise.

III. *Professor Spence* then read OBSERVATIONS ON THE NATURE, SYMPTOMS, AND TREATMENT OF CONSTRICTED OR STRANGULATED HERNIA, REDUCED "EN BLOC," which appeared at page 97 of this Journal for August.

Dr P. H. Watson felt sure the Society was deeply indebted to Professor Spence for his able communication, and the views, based on his large experience, which he had advanced. The fact that Mr Spence so strongly advocated the direct operation when the hernia was reduced *en bloc*, must strengthen the confidence of surgeons in pursuing a similar course. Any surgeon who used the incision in the mesial line, and thus attempted to reduce the strangulation *ab intra*, must lay his account in some cases with having to follow it up by closing the wound, and operating by the direct method, else he risked faecal extravasation into the abdomen.

Mr Bell did not rise for the purpose of criticism, but merely to express his entire concurrence in *Mr Spence's* views. *Mr Spence* was his infallible authority on hernia and tracheotomy; and whatever *Mr Spence* said on these subjects, in which his experience had been so extensive, he regarded of quite exceptional value. He had been specially impressed with *Mr Spence's* remarks on the diagnosis of a hernia reduced *en bloc*.

Dr A. G. Miller had been interested in *Mr Spence's* remarks on the difficulty in reducing the hernia by traction from within. In a recent paper by a French surgeon, whose name he had forgotten, it was pointed out that by such traction the hernia was bulged transversely, and thus its reduction hindered.

Mr Spence thanked the speakers for their remarks. *Dr Miller* had somewhat misunderstood him as to the effects of direct traction. When the hernia was not absolutely strangulated it was an assistance to have it drawn on from within. Enemata by exciting peristalsis tended to effect such traction, and then the regurgitation of flatus or thin fæces diminished the distention and favoured reduction. What he had really alluded to was the risk of the gut giving way when direct traction was made. The chief point was the diagnosis. If a hernia was reduced *en bloc*, fairly out of the canal, no effort of the patient could bring it down again.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION XXXVIII.—MEETING XII.

Wednesday, 25th June 1879.—*Dr WILSON, President, in the Chair.*

I. *Dr Young* showed an UMBILICAL CORD, with well-marked torsion of the vessels.

II. *Dr Duncan* of Dundee sent for exhibition by Professor Simpson, a CALCIFIED FIBROID TUMOUR of old standing, from a patient in whom death had resulted from obstruction of the bowels, with the following notes of the case:—

Martha M., millworker, æt. 46, unmarried, admitted to Dundee Royal Infirmary, 16th May 1879.

Catamenia ceased some seven or eight years ago, but previously, and since, she had always enjoyed good health till about six months ago. She then got very weak, which she attributes to hard-work. Three months ago she had cramps in the stomach, and then six weeks ago severe lumbar pain, and difficulty in micturition, both frequent and painful. Of late the bowels have been very confined, but only the last few days has she been vomiting occasionally greenish-like fluid. Has been off her work for ten days.

On Admission.—Aspect anxious looking. Is unable to lie with comfort on account of pain in the back. Tongue clean; pulse

quiet; temperature normal. Ordered turpentine enema, fomentations to loins, and potass bitart. drink.

17th May.—Urine, which passed twice without pain, is of sp. gr. 1015, and contains no albumen. Enema very slight result.

Examination of Abdomen.—Considerable tympanitis. In pubic region there is a hard, well-defined tumour rising about $1\frac{1}{2}$ inch above symphysis—not tender or movable externally, but moving with the sound when this was introduced into the uterus. The sound passed in $3\frac{1}{2}$ inches. In right iliac region are two movable hard bodies about size of pigeon's eggs, the inner of which is tender to pressure. A third similar body lying alongside was subsequently discovered—they were supposed to be scybalous masses. *Per rectum.*—The tumour was felt to fill up the pelvis.

Treatment consisted of administration of haust. nigr. and ol. croton, which having no effect, enemas both of warm water and oil were repeated with the long tube, which was passed with comparative ease. Their sole result was then to bring away some masses of hardened fæces which were felt in the transverse and descending colons. The vomiting, at first not severe, became latterly very urgent, though never stercoraceous either in appearance or odour. Neither opium, belladonna, bismuth, hydrocyanic acid or ice had any effect in checking it. The only temporary relief was afforded by morphia hypodermically, which generally gave two or three hours' remission, and allowed a little sleep. There was never much complaint of abdominal pain. She got gradually weaker, and died on evening of 30th May.

Section forty hours after death. Only abdomen opened. The greater extent of the small intestine was injected, some parts deeply, and more particularly the lower part of ileum, which was almost gangrenous. The large intestine was not so deeply injected. No apparent involution or other obstruction of the intestine. The tumour felt in life was seen to be filling up the pelvis. It was of a bony hardness, so much so that the saw had to be used to make a section of it. The ovaries were apparently normal. There were three smaller tumours springing from the right side on lateral and posterior aspects. The bulk of the tumour is to the left side of the uterus."

Professor Simpson remarked that the case was an extremely interesting one. So far as he knew, it was the first instance recorded where a fatal issue had been brought about by obstruction of the bowels, from a fibroid in such a condition. While such tumours were still actively growing it was not uncommon to find them interfering with the neighbouring viscera, although the bladder was more frequently disturbed than the bowels. But when a tumour had passed its progressive, and had entered on the retrogressive changes associated with the calcification or ossification which had taken place so largely in this specimen, gynecologists were ready to conclude that all danger from it was at an end. Probably the tumour had been of larger size and abdominal in its situation, and

had got driven into the pelvis three months before the patient's death, when it had just shrunk to such a size as allowed of its being packed into the pelvic cavity.

III. *Professor Simpson* read notes of a case of FIBROID TUMOUR EXPELLED UNDER THE USE OF SUBCUTANEOUS INJECTIONS OF ERGOTIN. He reminded the Society that in his address at the opening of last session he had expressed himself favourably as to the value of Hildebrandt's method of treating certain cases of fibroid tumours of the uterus by means of hypodermic injections of ergotin. Further experience had since confirmed the favourable impression of the value of this mode of treatment in appropriate conditions. He begged now to show the fragments of a tumour which had been expelled from one of his Infirmary patients who had been thus treated. Under the microscope the masses were seen to be myomatous in structure, and it was interesting to observe to what an extent the individual muscular fibres were in process of fatty degeneration. The following is the history of the patient as drawn up by the clinical clerk, Mr Alexander Bruce, M.B.

Mary M., 54, a widow, residing at West Calder, admitted 23d February, examined 25th February 1879.

Complaints.—Swelling in lower part of abdomen; bloody discharge; pain in the back; painful and frequent micturition.

History of Present Illness.—Patient had always good health till about seven months ago, when she noticed the swelling in the lower part of the abdomen, which caused her considerable discomfort, especially on making water, which she had to do at short intervals.

General Appearance.—Patient is of average height and development; is an albino; not markedly anæmic.

Menstrual History.—Menstruation began when patient was at the age of 14; was always irregular; recurring at intervals varying from three to six weeks; lasting about two or three days at each time. Has been in abeyance only during pregnancy and nursing. Seven months ago the discharge at each period became excessive, and it was at this time that she first observed the tumour. For the last three weeks there has been a constant and considerable loss of blood, which has greatly weakened the patient.

Obstetric History.—She was married at 17; has had nine children, all born alive, at full term, with normal labours. Last child born three years ago.

Abdomen.—On inspection, walls flaccid, striæ of previous pregnancies; a prominence can be seen above pubes in the middle line, extending about halfway to umbilicus.

On Palpation.—A hard resistant tumour of rounded form and smooth surface is felt in the middle line above the pubes, measuring $5\frac{1}{2}$ inches transversely, and 4 inches vertically; the hand cannot be passed between the tumour and the pelvis in front.

Percussion.—Dull note corresponding to area mapped out on palpation.

Auscultation.—Negative results.

On Vaginal Examination.—Ostium vaginæ patulous; vaginal walls smooth and moist. Vagina roomy. Cervix easily reached; looks downwards and backwards. In anterior and right lateral fornices a hard mass is felt. Os dilated admits tip of forefinger; fissured transversely; escaping from it some soft gelatinous discharge. The finger can be forced through the os externum, and touches a body on the left and anterior wall.

Bimanually.—The uterus moves with the tumour. Distinct thrilling pulsation is felt in the anterior part of tumour, which projects into vagina. The sound passes $3\frac{1}{4}$ inches to the left side.

Diagnosis.—Submucous fibroid tumour of the uterus.

Treatment.—Rest in bed.

R	Ergotin,	.	.	.	.	.	3ij.	
	Chlor. hydr.,	.	.	.	.	.	3j.	
	Aquæ,	.	.	.	.	.	3ij.	M.

Sig.—Sixteen minims to be injected subcutaneously every second or third day.

Further Progress.—On 6th March all discharge of blood ceased.

From the 10th of March to 1st April she had great pain in the uterus; her temperature during that time ranging from $98^{\circ}4$, $100^{\circ}0$, $102^{\circ}0$, being generally higher in the evenings. She got morphia by the mouth frequently to procure sleep.

2d April.—Part of the tumour about the size, when pressed together, of a hen's egg, came away to-day.

3d April.—M. T. 99; E. T. 100. Vaginal injections of tepid solution of carbolic acid and hip-baths to arrest the fetid discharge.

5th April.—Another part of the tumour came away to-day. Part in a sloughy condition. Great fetid discharge. E. T. 103.

7th April.—Pain ceased.

15th April.—Pain in uterus. Small piece came away to-day, after which pain quite ceased.

Since the last part of the tumour came away there has been a great deal of white discharge, but it entirely ceased on 24th April. There is now no pain, and the temperature is quite normal.

6th May.—On examination, tumour much diminished in size, but still larger than normal uterus. There are one or two irregular nodules on the left side under the peritoneum. A small almond-shaped swelling (the left ovary) is felt in the left side of the posterior fornix."

Dr Bell of Glasgow had a good opinion of the effects of ergot in uterine fibroids, and mentioned a recent case in which a tumour had been expelled under its use in a state of fatty degeneration. He was especially anxious to make known the method he employed in administering the ergotin, which was in the form of suppository.

He had found it quite as efficacious as the subcutaneous injections, and quite unattended with unpleasant results as often happened with the subcutaneous method.

Dr Baird had recently treated a fibroid by subcutaneous injection with manifest shrinking of the tumour, but had been obliged to desist on account of the pain it had caused to the patient.

IV. *Dr Baird* read a paper on the treatment of a case of PUERPERAL SEPTICÆMIA.

The *President* thanked *Dr Baird* for his communication.

Dr Macdonald felt sure he would express the feeling of the Society when he thanked *Dr Baird* for his paper. This condition was always a painful one for the obstetrician to have to deal with, and considering the difficulty of its treatment, it was our duty at all times to endeavour to avert the onset of fever during the puerperal state by all the means in our power. In tedious labour he was convinced that it was desirable to shorten the second stage by all prudent means, as by its prolongation the patient was doubtless endangered. But though tedious labours often led to disastrous results, the dangers were not restricted to these forms, for precipitate labours also were curiously specially liable to go wrong, in his experience even more so than tedious ones, possibly owing to some peculiarity of the nervous system. In his hands treatment of well-marked cases of the disease had not proved very satisfactory, and prophylaxis in the form of the diligent observance of cleanliness on the part of the nurse, doctor, and patient, and the free use of powerful antiseptics for the hands and for washing out the vagina and uterus, especially if the labour were severe or the discharge fetid, had mainly to be relied on. He had not found purgatives of any advantage. As to Warburg's tincture, he must confess its effects were also disappointing. He had used it largely in puerperal and other cases, and considered it of far less value than quinine in reducing temperature, and thought its effects in true septicæmia would be found to be *nil*. One advantage it had was, that it was pleasant to take and soothing, and it was apparently beneficial in mild febrile affections of childbed. He was only, however, expressing his own opinion of the drug, and hoped that possibly further experience might modify it. One point in these cases was their natural tendency to rapid changes of temperature, which made it a difficult matter to estimate the true value of any antipyretic drug we might be using.

The *President* mentioned that most of the fever cases he had met with in early practice occurred after very easy labours.

Professor Simpson thought in any case we were indebted to *Dr Baird* for his communication. He had, however, some doubt as to the case being one of true septicæmia. Cases, when the symptoms came on late, had a very variable course, and generally ultimately got well. He was not in the habit of using Warburg's tincture,

but trusted chiefly to aconite, which was most useful in controlling temperature and circulation. In a case of abdominal inflammation after ovariectomy he had used cold water by ice bags and a water-bed to reduce the temperature. His general opinion of these cases was that they varied much, not only according to the peculiar nature or variety of the poison, and the quantity introduced into the system, but also according to the constitutional peculiarity or condition of the patient.

Dr Baird, in reply, stated that possibly the late onset of the symptoms might tend to invalidate the theory of septicæmia. He had only desired to contribute this case as an additional record of such cases. He had found the more or less continuous application of cold too disagreeable to the patient.

V. *Dr Hart* read a paper on the BEARINGS OF THE SHAPE OF THE FETAL HEAD ON THE MECHANISM OF LABOUR, which appeared at p. 145 of the Journal for August.

Professor Simpson alluded to the paper as a following up of the principles so ably and, in his opinion, correctly brought forward by Laas. The more he thought over the subject the more he believed in the correctness of these views.

Dr Macdonald thought the paper interesting and instructive, but without further study and careful consideration of the arguments, he scarcely felt warranted in expressing an opinion upon the conclusions arrived at in the paper. He was old-fashioned enough to believe in the existence of a foetal axis pressure propagated along the spine of the child, at least after the rupture of the membranes, and regarded it as necessary in explanation of the flexion movement of the head. At the same time, he was willing to admit that perhaps rather much had been made of this subject, and that sufficient attention had not been paid to the influence of the surface of the head and of the pelvis upon the direction of the head in its transit. As to the principle of the descent of the head illustrated by the model, he thought the blocks of wood assumed the position which gravity gave them, and that the direction of the surface had less to do with the matter than *Dr Hart* seemed to suppose. The head did, however, not descend by gravity, but as the result of pressure. As to the observations on rotation of the head, he would study them with extreme interest, as to him the subject was always a puzzling one. Every theory he had yet seen of rotation was imperfect, and while most of them would suit for the ordinary position of the head, with the occiput from the first either in the transverse or looking forward, they were found to fail when you tried to apply them in cases in which the long rotation took place. If *Dr Hart* had given, as he appeared to think, an explanation of the rotation movement suiting all positions of the head, he would have solved one of the most difficult problems in scientific midwifery.

Dr Bell of Glasgow mentioned a case of occipito-posterior position, in which the head to the last retained the position it took at the beginning of labour. The elasticity of the head, he thought, had a deal to do with the position it assumed. The question was very much one of accommodation, as far as an elastic body under pressure could be influenced by it.

Part Fourth.

PERISCOPE.

PASTEUR ON A POSTHUMOUS WORK OF BERNARD'S ON ALCOHOLIC FERMENTATION (*Centralb. f. Chir.*, No. 6, 1879).—In July 1878 a posthumous manuscript of Claud Bernard's on the above subject was published by Bertholot, in the *Revue Scientifique*, which Pasteur severely criticised, as it was diametrically opposed to statements which lay at the foundation of his theory. Pasteur says, Bernard's first thesis is, that the phenomena of organic synthesis and destruction belong to completely distinct categories, and that fermentation, as belonging to the latter, has no relation whatever to the former. Construction and destruction cannot be effected by the same process, says Bernard. Pasteur, on the other hand, maintains that fermentation shows the phenomena of life, such as cell formation, and cell and tissue change, when such take place without the aid of free acids or the entrance of air. Thus, Bernard refers the rotting of ripe grapes to a soluble alcoholic ferment which reveals itself after the manner of purely chemical agents; and as Bernard, unlike Bertholot, states that this ferment is present in ripe fruit, Pasteur brings experimental proof against this view. As soon as possible after the publication of Bernard's paper, Pasteur sent suitable vessels to the Jura, and July grapes were enclosed in such a manner that only pure air could reach them; some were also wrapped in cotton-wool, and in October were exposed. In spite of complete ripeness, those which were protected could be kept without rotting at a temperature of 25°–30°, while those which were exposed to the air quickly rotted. Thus Bernard's assumption, that there is a "propriété-protoplasmique" in the ripe fruit which is absent in the green, and destroyed in the rotten, falls to the ground. In this we see how *a priori* reasoning may lead astray a man of accurate observation.

SALOMONSEN. NOTE ON THE OCCURRENCE OF BACTERIA IN METASTATIC ABSCESSSES IN THE LIVING (*Centralb. f. Chir.*, No. 2, 1879).—A man twenty-one years of age was admitted into hospital

in Copenhagen, suffering from high fever, with suppurative arthritis of the metatarso-phalangeal joint of the right great toe. He died of pyæmia with numerous metastatic abscesses. In the course of the illness, Salomonsen examined microscopically pus from various metastatic collections, and found—1. In pus, drawn by aspiration from the knee-joint, streptococci in small chains. 2. In pus from an articular accumulation on the dorsum of the right foot, likewise streptococci, but more numerous and in longer chains. 3. In pus removed by aspiration from the shoulder-joint, likewise streptococci. 4. Next day there was a greater accumulation in the same joint, and the pus showed red blood-cells and streptococci, and numerous bacteria (*Bacterium termo*). 5. A pyæmic abscess of the calf of the leg also contained many streptococci.

In four other closed metastatic collections, these were likewise present. In one only (described under 4) there were bacteria other than streptococci; and this was ascribed to the puncture of the previous day.

Pus from the abscess in the calf was subjected to the following experiment:—A drop was injected into the pleura and peritoneum of a rabbit. It died in four days. The autopsy revealed purulent inflammation, and the pus contained streptococci only. A drop of pus from the pleural cavity of this rabbit was injected into the pleura of another, which died in eight days from purulent pleurisy and pericarditis. The blood of this animal contained no bacteria; in the pleural pus there were many streptococci; in the pericardial pus, none. The author is of opinion that the inflammation extended from the pleura to the pericardium by channels imperious to streptococci.

PASTEUR, JOUBERT, AND CHAMBERLAND ON THE GERM THEORY AND ITS APPLICATION TO MEDICINE AND SURGERY. (*Centralb.f. Chir.*, No. 3. 1879).—On the occasion of a discussion on the treatment of wounds, Pasteur gave the results of his investigations, in connexion with the above observers, on septicæmia and pyæmia, in the form of fifteen theses, and in an exhaustive lecture (*Bull. de l'Acad. de Méd.*, Nos. 4, 8, 18, 20, 28–30), in which he drew many conclusions of practical interest. As Colin (*Bull.* 20) disputed one point of Pasteur's speech relating to splenic inflammation (milzbrand) in the fowl, a lively controversy arose, which was referred for settlement to a committee of investigation. The following are Pasteur's theses:—

- I. 1. There are several kinds of septicæmia or putrid infection.
2. There are several septic vibrios whose characters differ in some important particulars. The *vibrio septicus* is one of the most dangerous of these.
3. The latter requires no air to live, but has both its infective property and life destroyed by the prolonged action of air upon it.
4. In order that it may be developed in a fluid exposed to air, such fluid must have a certain depth, that the

vibrio may be protected in the lower layers by organisms in the upper. 5. The vibrio septicus lives and multiplies *in vacuo* and in pure carbonic acid gas, but loses thereby its thread-shape, and shrinks to "corpuseles germes." 6. These germs (Kèime) are carried about as dust in air and water. 7. They retain life and developmental capacity even in oxygen (Saurstoff-gas) under a pressure of several atmospheres. 8. They are fertile *in vacuo* and in pure carbonic acid gas, as long as they have sufficient nourishment. 9. Among disease ferments and organisms, which cause or accompany diseases, there are some which live exclusively in air, others which can exist with or without air, and yet others which live only *in vacuo*. 10. Naming and classifying them from a morphological point of view is impossible, as the same vibrio assumes all possible forms. 11. The germ theory (Keimlehre), notwithstanding the verdict of physicians, is perfectly true. I shall demonstrate that the introduction into the living body of a minute microscopic germ, not hitherto described, causes profuse suppuration. It is found in ordinary water, and may be brought in contact with wounds in washing them. 13. When any treatment of wounds without antiseptic precautions is not fatal, we have to thank the constitution of the patient (Widerstands-kraft). 14. The open treatment of wounds, as well as that by continuous bathing (irrigation), is an argument in favour of the germ theory. 15. That innocuous vibrios are found in wounds does not prove that certain organisms exist (neben sachlich sind) under Lister's or Guerin's dressing.

II. Pasteur's Lecture. (*Bull.* 18.) As in the case of splenic inflammation, P., J., and C. desired to produce the vibrio septicus from the abdominal fluid of animals which had died of septicæmia, but their efforts remained fruitless. They therefore tried generation *in vacuo* and in pure carbonic acid gas, as in the case of the ferment of butyric acid fermentation, and on each occasion obtained a like successful development of septic vibrios; conversely, all septic vibrios died in fluids which were sufficiently exposed to the air; the thread-shaped structures (Wesen) disappeared, and one only found "de fines granulations amorphes;" the fluid itself was likewise non-infective. This result only refers to fluids with fully developed vibrios, not to those which contain the "germes," the "corpuseles brillants." The latter, on the admission of air, remained sterile, it is true, but capable of life, and always ready to yield new generations. If vibrios were only accidentally found in virulent fluids, and if these lost their virulence in so short a time on exposure to air, this ought also to be the case with those fluids which contain the "corpuseles germes." The soluble poison (Panum), sepsin (Bergmann), Pasteur could nowhere discover. That the ordinary aërobious vibrio found in organic infusions is innocuous does not depend upon the fact that it is aërobious, for the splenic vibrio is, notwithstanding this property, very dangerous.

It is owing rather to the circumstance that the former cannot endure a temperature of 38° , just as the splenic bacteria can no longer develop in fowls with a temperature of about 42° . If, however, we inoculate with splenic bacteria fowls whose temperature has been reduced by semi-emersion to 37° or 38° , they die in 24 to 30 hours, and bacteria are found throughout the body. Observe, however, that, unlike vibrio septicus, the splenic bacteria never exist either *in vacuo* or in carbonic acid gas as "corpuscles germes."

From what has been stated, we can now understand how commencing septicæmia may be arrested by washing wounds with ordinary water, or by admitting air freely to them. A single blood-clot, however, or a piece of dead tissue in a corner of a wound, may, from the absence of oxygen and the accumulation of carbonic acid, become a nidus for the most rapid development of septic germs. To understand aright the 1st and 2d theses, it is of especial importance to note, that Pasteur states how that, by the production of vibrios in a ten times diluted, neutralized, and previously-heated solution of Liebig's extract of meat, he has come to the conclusion, that for septicæmia in its restricted sense only one kind of vibrio exists, which, however, assumes different forms, with different means for its production. Among these are the lentil-shaped bodies which are found in the muscles, and especially the abdominal muscles of animals whose peritoneal fluid contains the thread-shaped vibrio septicus.

Pasteur then touches upon the question, how we may distinguish one kind of bacterium from another. The anaërobin may be produced *in vacuo*, as by bringing a drop of water or a piece of cotton-wool impregnated with dust in contact with a piece of muscle protected from the air. If the vibrio septicus alone is brought in contact with such an object, a rapidly gangrenous destruction of the latter is brought about. A fresh hint for surgeons is, that all that comes in contact with wounds should have been heated to 130° – 150° , and water to 110° – 120° . In the case of anti-septic fluids, such as solutions of carbolic acid, a very moderate strength is then only necessary.

In conclusion, Pasteur notices a vibrio which causes profuse suppuration in wounds. He met with it in several samples of ordinary water, although not constantly. It is both aërobious and anaërobious, but has the property of a ferment only on the admission of air. When well-developed, especially under the influence of air, it is sausage-shaped and very mobile. At rest it resembles the bacterium termo, and like the latter is slightly constricted. A few hours after inoculating rabbits and guinea-pigs with it, supuration begins, and in a few days enormous collections of pus are formed. This microbion is the third variety which can multiply in the living body, and can induce secondary deposits. Pasteur will on a future occasion discuss this pus formation, which, according to his own, J's., and C's. researches, is due to the metamor-

phosis of red-blood cells. The vibrio septicus, as also the kind last mentioned, produce in the body the phenomena of septic pyæmia.

III. Colin v. Pasteur. (*Bull.* 20, 28, 30.) Colin tested Pasteur's experiments on splenic inflammation (Milzbrand) in fowls, and obtained altogether negative results in fowls, pigeons, old cats and dogs alike, and these animals with a temperature of 30°–40° were insusceptible, while rabbits and sheep at 40°–41° were infected. The height of temperature, therefore, cannot with these animals offer an impediment to infection. Pasteur demanded a committee to test his statements. The latter verified Pasteur's assertions as to the susceptibility of fowls to splenic inflammation with a depressed temperature. Colin, on the other hand, maintained that Pasteur's treatment of the animals rendered them anæmic and ill, and thereby incapable of resisting the influence of the poison. With greater care and without lowering the temperature too much, the inoculation according to Colin does not succeed.

MONTHLY RETROSPECT OF OBSTETRICS AND GYNÆCOLOGY.

BY ANGUS MACDONALD, M.D.

THE LACTOSURIA OF LYING-IN-WOMEN.—Dr P. Kaltenbach contributes a long and interesting paper upon this subject to the *Zeitschrift für Geburtshülfe und Gynäkologie*, bd. iv. s. 163. After a lengthened historical *résumé* of the various and frequently contradictory opinions hitherto held upon this subject by the authors who have studied it specially, Kaltenbach is led to support out and out the deductions of Hofmeister, "that in the urine of women giving suck there is demonstrable the existence of a reducing substance, which from its behaviour towards the ordinary tests for sugar may be looked upon as sugar, and that this substance bears a certain relation to the secretion of milk." But Kaltenbach, in the paper we are considering, carries the question a step further, and believes that he has demonstrated that that substance is really sugar, and not merely a substance which responds to the ordinary sugar tests. By a long process of precipitations, washings, etc., Dr Kaltenbach was able to separate the reducing substance in a crystalline form. The crystals were colourless, transparent, presenting straight rhombic prisms with ends obliquely cut off, insoluble in alcohol and ether, easily soluble in cold water. At a temperature of about 150° C. they became brown, and gave forth an odour of caramel. Examined in the saccharometer, the solution exhibited a powerful right-handed rotation. Boiled in diluted sulphuric acid the crystals became directly capable of fermentation, *slightly warmed with diluted nitric acid they gave mucic acid*. Repeated experi-

ments convince Kaltenbach that this reaction is able to detect infallibly the slightest amount of sugar. He regards it, therefore, as proved beyond a doubt that there does exist milk sugar in the urine of lying-in women. From another series of careful observations the author finds that the amount of sugar in the urine varies with the condition of the breasts. If they are tense or congested there is found to be an increase of sugar in the urine. He thus is led to give out and out support to the views of du Moulins, du Sinétz, and Spiegelberg on this subject, and maintains that the explanation of the phenomenon is to be found in the intensity of the physiological congestion of the excretory ducts of the milk glands. The amount of this congestion conditions the resorption of milk and its separation in the urine. Finally, our author states that the relation between congestion and the amount of sugar contained in the urine may be most plainly demonstrated in the cases of such lying-in women whose children were either born dead, or died during the period of lactation. The quantity of sugar of milk is especially considerable in the urine of patients, in whose cases on account of mastitis, or of badly developed or shrunken nipples, or of other puerperal processes, the application of the child to the breast was retarded, and its artificial nourishment rendered necessary, because in them the conditions for the establishment of great obstructive congestion were fulfilled.

THE TREATMENT OF ABORTION. — Immediately following Dr P. Kaltenbach's paper upon lactosuria in the above-mentioned journal, is one by Dr J. Veit upon the treatment of abortion. In it the views lately promulgated on that subject by Fehling in the *Archiv für Gynäkologie* are discussed and disputed. Dr J. Veit regards the methods of interference recommended by Fehling as too active, and would recommend a more expectant treatment in the majority of cases, contenting himself with careful plugging of the vagina when there was hæmorrhage of a severe kind and waiting, thus avoiding forcible dilatation, incision of the cervix, or the use of the curette. He urges strongly that in estimating the results of treatment in abortion we must not forget those inseparable from the operative measures we employ to end it. The author, however, recommends active measures to empty the uterus in such cases of delayed abortion as threaten danger to the mother from absorption of putrescent portions of the ovum or of its envelopes. An account of two such cases is given, where the author was led to hurry the expulsion of the contents of the uterus on the sudden occurrence of rigor and high fever. Temperature 105°. Both cases were successful. J. Veit endeavours to show that the menorrhagia, so frequently met with after abortion, is not necessarily due to any portion of the placenta having been retained, but to alteration in the growth of the mucous membrane dependent upon imperfect

involution of the uterus. He enters his protest against the use of the sharp curette for removal of retained portions of membrane, recommended by Böter and others, as being unnecessarily dangerous.

THE RELATION OF THE CERVIX UTERI TO THE "LOWER UTERINE SEGMENT" is the subject of an exhaustive article by Dr M. Thiede of Berlin, at p. 210 of the same journal. The following are the conclusions at which the author arrives:—1. Since in all cases the lower uterine segment from Müller's ring upwards was found by me covered with the remains of the decidua vera,—in one case, indeed, the membranes were found firmly attached to the lower uterine segment close to the upper edge of the cervical canal,—I must regard the latter as belonging to the cavity of the uterus. The ring of Müller and the inner os uteri coincide in my preparations. The lower uterine segment, therefore, rightly merits its name, although, according to the conception of Küstner, it would be better described as the upper cervical segment. "2. The mucous membrane of the cervix undergoes during pregnancy considerable alterations, which, however, are not constantly of the same kind. Most commonly one can distinguish easily a superficial layer more firm, made up of spindle-cells, and a deeper layer made up of connective tissue, arranged in a reticulated manner. The relation of these two to one another is, however, changing, and each of these occurs alone by itself. In consequence of the rather loose condition of tissue, especially at the upper end, there appears to me to be much favoured the occurrence of a condition which we very frequently find on section of lying-in women, I mean the sanguineous infiltration of the tissue, which frequently raises the cervix up into thick elevations Also we can frequently observe differences on the epithelium at different elevations in the cervix. In one case the cells would remain up to the ring of Müller, entirely equal in height, quite small, clear and transparent, little infiltrated by granular contents. More frequently, again, we find the cells becoming upwards of a lower grade, somewhat broader, with thicker walls, and more opaque by granular infiltration. In general the same condition exists on the surface, and in the corresponding glands. 3. The remnant of decidua, which I found on the lower uterine segment in all cases, is so characteristically indicated by the arrangement of its connective tissue, the size and condition of its cells, and especially by the constant relation of its glands, that a distinction between the lower uterine segment from the, occasionally, of course, greatly altered mucous membrane of the cervix, cannot but seem constantly possible.

THE PRESENTATION OF THE POSTERIOR PARIETAL is the subject of an article by Dr J. Veit, following the above, and commencing at page 229. The author criticises the views already put forward by Litzmann on this subject. He disagrees with Litz-

mann in his explanation of the mechanism, when the latter says that delivery is spontaneously effected by a rotation of the head round its antero-posterior axis, the anterior parietal descending behind the symphysis pubis, and the posterior ascending in front of the sacral promontory. Dr Veit maintains that there is no such ascent of the posterior side of the head. He holds that when the case is terminated by natural efforts, the head is pressed more and more down, and compelled to rotate round the promontory of the sacrum as a centre; the perpendicular diameter of the head becomes thus the half-diameter of a circle, whose centre is at the promontory of the sacrum. Whether the delivery is possible or not depends upon the degree of adaptation between the perpendicular diameter of the head and the conjugate diameter of the inlet of the pelvis. If these are nearly equal, spontaneous delivery, according to the above mechanism, is possible. Dr Veit thinks Litzmann was led into error by finding, as the posterior parietal bone was rotated backwards and downwards, that it was more difficult to reach it than before rotation commenced. This difficulty he explained by *assuming* an upward advance of the posterior parietal, falling into a mistake precisely analogous to that by which Naegele originally assumed the deeper position of the anterior parietal in normal labour. Dr Veit thinks, also, that when Litzmann describes three distinct degrees of this presentation, viz., 1st, When the sagittal suture lies slightly in front of the middle line of the pelvis; 2d, When the sagittal suture lies close behind the symphysis pubis; 3d, When only the posterior parietal bone can be felt, he is merely describing different stages of the same presentation, the original presentation of the whole of the posterior parietal or Litzmann's third degree passing successively into No. 2 and No. 1 in the process of spontaneous delivery. Dr Veit also describes a bulging of the lower surface of the head, a flattening of upper, and a degree of flexure of its perpendicular axis under the combined force of the pains, and of the resistance of the pelvic brim, as a preparation for the rotation movement being completed. He has also noticed that in these cases the posterior parietal is found to project greatly at the sagittal suture, in front of and overlap the anterior parietal, instead of as usual being overlapped by the anterior parietal. As observers of displacement of the cranial bones during delivery have been wont to notice that this particular condition occurs in about 20 per cent. of all vertex cases, and as this ratio is about the percentage in which Litzmann has observed presentation of the posterior parietal in flat pelves, Dr Veit is inclined to believe that the overlapping of the posterior parietal over the anterior may be chiefly occasioned by this peculiar presentation. Another important peculiarity which Veit has observed in connexion with this presentation is enormous dilatation of the lower uterine segment or of the cervix at its posterior aspect, owing to the oblique manner in which the uterine contractions are brought into action when the head and trunk are placed not in one line, but are inclined at an angle to one another. On one occasion this dila-

tation was so marked, that the firmly-contracted anteverted uterine fundus and body containing the breech of the fœtus were mistaken by him for a large fibroid attached to the anterior wall of the uterus. It was only after delivery by version that he observed his mistake. This condition can only be made out with certainty by carefully-combined internal and external examination. As to treatment, Veit is not inclined to trust much to rectification of the position and the use of forceps, as Litzmann proposes, but he would in a difficult case rather turn early.

[The paper deserves the closest study of every scientific obstetrician.—A. M.]

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Edinburgh School of Medicine, etc., etc.

JABORANDI IN OBSTINATE HICCOUGH.—Dr Ortille of Lille communicates to the *Bull. de Thérapeutique* the case of a woman, æt. 56, who came under his care for hiccough, which had lasted for seven months. The hiccough was almost continuous, at the rate of thirty or forty a minute, and was accompanied by vomiting. Occasionally there were intervals of five or ten minutes. Various remedies had been tried in vain, and now a decoction of the leaves and stalks of jaborandi was prescribed in two doses, to be taken within an interval of a quarter of an hour. The usual sweating and transpiration were produced, as was some vomiting, and in two hours the hiccough had ceased.—*Medical Press and Circular*, 30th July 1879.

CHLORIDE OF BARIUM IN ANEURISM.—I have treated a case of abdominal aneurism at the unpromising age of 63, with one-fifth to two-fifth grain doses of chloride of barium, with great success, after failure of five months' rigid adherence to absolute rest and Tufnell's diet. The case was seen by several professionals besides myself, who all coincided in the diagnosis, and the reliability of the improvement has been verified by two of them. The chloride of barium, having affinity to the heart and bloodvessels, promises to be a great remedy in these diseases, and especially in aneurisms. I hope that those who have frequent opportunities of treating aneurisms will give this important drug a careful trial. (John Flint, M.D., Scarborough.)—*British Medical Journal*, 2d August 1879.

CANTHARIDIN FROM THE POTATO BUG.—It appears from some experiments detailed in the *American Journal of Pharmacy* for June, that the fresh powder of the potato bug yields about $1\frac{1}{3}$ per cent. of pure cantharidin. This is a large product, and no doubt these pests will be increasingly used as a cheap source of this valuable remedy.—*Philadelphia Medical and Surgical Reporter*, 26th July 1879.

SODIUM-SALICYLATE IN CHRONIC RHEUMATISM.—There are few better established facts in the history of therapeutics than the success in acute rheumatism of treatment by the salicylates. Very little evidence, however, has been given of its effect in the chronic forms. A few observers, after a short trial, declared it useless, and few voices have been heard in its defence. In a paper read before the British Medical Association in 1877, I gave short notes of about 30 cases so treated. I have now accounts of 57 more—all well-marked cases of chronic articular rheumatism treated during the two past years as out-patients at the Leeds Infirmary. Making the usual allowance for the imperfection of out-patient notes, I find that out of the whole number of cases in which the drug was given, viz., 103, 16 did not return after the first visit. Next, out of the 87 of whom notes have been taken, 61 (70 per cent.) derived some benefit from the drug, which was in most cases sodium-salicylate, in doses of fifteen to thirty grains three times a day. The remaining 26 felt no improvement, and in four cases some sickness was noted. In comparatively few of the cases was the relief given as speedy as that afforded in the acute disease; but considering the generally unsatisfactory nature of the treatment of chronic rheumatism by drugs, I think we may say that sodium-salicylate deserves a further trial. (Ernest H. Jacob, M.B., late Resident Physician to Leeds Infirmary, Leeds.)—*British Medical Journal*, 2d August 1879.

USE OF CROTON-CHLORAL.—At a late meeting of the Boston Society for Medical Observation, Dr H. J. Bowditch reported a case of facial neuralgia, which had been relieved in a decided manner and without any unpleasant effect by three five-grain doses of croton-chloral after all other drugs had failed to give relief. Dr Williams stated that he had often used it with advantage instead of opium after operations about the eye. The chloral had no unpleasant effect, and he thought it safer. Dr J. O. Green remarked that he had used this drug at the City Hospital in cases of neuralgia of the head, and had obtained a wonderful effect in one case.—*Philadelphia Medical and Surgical Reporter*, 26th July 1879.

THE HYPODERMIC USE OF CARBOLIC ACID IN PILES.—Professor E. Andrews, M.D., of Chicago, says in the *Michigan Medical News*—The evidence in my hands points to the conclusion that, if the following rules be observed, the hypodermic injection of piles is less painful and fully as safe as any other operation:—1. Inject only internal piles. 2. Use at first only one part of carbolic acid to twenty parts of the excipient, and stronger solutions only when these fail. Inject only two to four drops at first, and repeat with larger doses if needed. 3. Inject very slowly, smear the parts first with unguent to protect them from accidental dripping, keep the pipe of the syringe in the pile for a few moments until the

fluid becomes fixed. 4. Treat only one pile at a time, and allow from four to ten days between the operations. 5. Dangerous hæmorrhage has occurred as in other operations, from the patient proceeding at once to active exercise. He should be confined to bed the first twelve hours, and returned to it subsequently if the parts inflame much or the pile suppurates or mortifies. This great western epidemic of pile doctors is one of the most interesting events of surgery, and seems to have resulted in the addition of a really valuable improvement to our resources.—*Philadelphia Medical and Surgical Reporter*, 12th July 1879.

PERISCOPE OF OPHTHALMOLOGY.

By Dr KIRK DUNCANSON, Surgeon to the Ear Dispensary, 6 Cambridge Street ; Assistant-Surgeon, Eye Infirmary ; Lecturer on Diseases of the Ear, Edinburgh School of Medicine.

CORNEITIS OSTREARIA. — Dr W. J. M'Dowell, chief of the clinic of eye and ear diseases in the University of Maryland, describes a prevalent disease amongst oyster-shuckers, known under the name of oyster-shucker's corneitis. This condition, which has hitherto been thought due to traumatism, the result of fragments of shell flying into the eye, Dr M'Dowell thinks to be due to a specific toxic element contained in the slime and dirt which coats the oyster-shell. He says the appearance of the eye is characteristic, and that the symptoms are as constant and well marked as those found in any other disease of the eye.

NYSTAGMIC MOVEMENTS OF THE EYES CAUSED BY AURAL AFFECTION.—Dr Pflüger publishes in the *Deutsche Zeitschr. für Pract. Med.*, 1878, No. 35, and *Centralblatt für die Medicin Wissenschaft.*, 31st May 1878, a case of polyp in the ear, complicated with a chronic purulent catarrh of the middle ear, where nystagmic movements of the eyes and tendency to falling invariably appeared when the loop that had been put round the polyp was drawn tighter or even pulled. The author explains this case by assuming that the peculiar movements of the eyes were due to the fact, that the irritation was propagated from the polyp to certain peripheric portions of the brain. This assertion is supported by the situation of the polyp, its basis occupying a large portion of the roof of the external roof of the lateral meatus, especially the tegmen tympani, and being immediately in front of the tympanum. Hitzig and Curschmann have proved that there exist in the brain several spots which, when stimulated, cause nystagmus.

A SUGGESTION.—Perhaps the following hint, with a view to the prevention of the ophthalmia of new-born children, may be of use. The instant the head is born, and before the child has time

to open its eyes, I wipe away from the eyes every trace of moisture. In this way the entrance upon the conjunctiva of all acrid discharge from the vagina is prevented. I have attended to this point in hundreds of cases, and have never known it to fail; while, in the same period, ophthalmia has repeatedly occurred in those cases where the child has been born before my arrival. Carefully to wipe the eyes of the child at the earliest possible moment has now become with me so much a point of routine that I never omit it, even in forceps cases, or in the uncommon presentations, and the result is the absence of the disease alluded to. Successful practice often depends upon close attention to small details; and although my suggestion may to many seem the smallest of the small, yet I hope I may be pardoned for mentioning it.—Letter from Samuel Hague, M.D., *British Medical Journal*, 21st June 1879, pp. 945, 958, 959.

At a sitting of the Société de Biologie, held on 22d February, M. Javal gave some further explanations of the reasons why the yellow colour is the best for printing paper. The eye is not achromatic. All light, comprising various colours of the spectrum, produces on the retina circles of diffusion. The only means of avoiding these would be to employ a mono-chromatic light; but this, whatever it might be, would be insufficient. Since it is not possible to suppress without inconvenience six of the colours of the spectrum, it is at least possible to eliminate them to the utmost extent by attacking them either on the side of the red or on the side of the violet. In the first case we are deprived at the outset of too considerable a quantity of light, and we fall again into the inconvenience of monochromatic light. In the second, one can without any disadvantage cut off the violet, the indigo, or the blue. The truncated spectrum which then remains will necessarily give less numerous and less extended circles of diffusion on the retina. Now, the colour which results from the composition of this demi-spectrum is just the yellow colour, and not yellow of every tint, but that which is naturally seen in the yellow colour of wood paper or chamois leather; and, for this reason, this colour is recommended by M. Javal for printing paper, as being the most healthy from the point of view of hygiene of the eyes.

DR CHIAPPELLI says that he has frequently noticed in patients who were apparently very far from death an extraordinary opening of the eyelids, so as to give the eyes the appearance of protruding from the orbits, which was invariably a sign that death would occur within twenty-four hours. In some cases only one eye is wide open, while the other remains normal; here death will not follow quite so rapidly, but in about a week or so. It is easy to observe this phenomenon when the eyes are wide open; but when, as is generally the case, the eyes are half shut, and only opened from time to time, it will be found advisable to fix the patient's

attention on some point or light, so as to make him open his eyes, when the phenomenon will be seen. The author is utterly at a loss to explain this symptom, and ascribes it to some diseased state of the sympathetic nerve.

THE CATHETER-GAUGE FOR MEASURING THE PUPIL. — Mr Arthur Cooper, in reference to Mr Hutchison's paper on the symptom-significance of different states of the pupil, *Brain*, part i., 1878, suggests the use of the French or metric scale. He recommends the use of a perforated card, including perforations from one millimètre to thirty millimètres in circumference. This card, he tells us, is sold by Rondeau Frères, 68 Rue J. J. Rousseau, Paris.

STRUCTURE OF THE CORNEA.—M. Ranvier has been of late devoting much time and care to the study of the structure of the cornea. He communicated the results of his observations to the Société de Biologie at a meeting on 8th February. According to him the corpuscles of the cornea cannot be seen in the normal eye of a living animal; they only appear when the eye in question has been kept for some time in aqueous humour. If the cells of the cornea become visible under the influence of steam, this is due to imbibition by the membrane. The fibres of the cornea are very hygrometric. A bull's eye, if plunged into distilled water, will increase in diameter several lines.—*The British Medical Journal*, 12th April 1879, pp. 560, 561, 562, and 570.

The February Meeting of the OPHTHALMOLOGICAL SOCIETY was made interesting by Dr Prout of Brooklyn, who exhibited the new German specula for examining the pharyngeal opening of the Eustachian tubes. They promise to be very useful in the hands of the trained specialist. The correspondent of the *North Carolina Medical Journal* had the pleasure of meeting there Dr George Graham of Raleigh, to whom the staff of the New York Eye and Ear Infirmary is indebted for suggesting the use of balsam of copaiba in obstinate photophobia from corneitis and other causes. It is smeared on the brows and lids, and Dr Oppenheimer, the courteous resident surgeon at the infirmary, speaks highly of its efficacy as far as the experience yet goes.—“Our New York Letter” in *North Carolina Medical Journal*, No. 3, vol. i.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., F.R.C.P., Lecturer on Diseases of the Skin, Edinburgh School of Medicine.

ON CANCER OF THE FACE, INCLUDING “RODENT ULCER.”—Dr Collins Warren separates those cancers of the face which are chiefly found above a line running from ear to ear beneath the nose, from cancers of the lip. The former correspond to those described

by Tiersch as flat or superficial cancers, as distinct from the infiltrating forms (*tiefgreifend*), of which cancer of the lip is the type. The skin of many of those persons who are affected with this superficial form has a peculiar appearance: there is a wax-like transparency of the temples and upper part of the cheeks, while the sebaceous glands, as closely aggregated small yellowish bodies, just beneath the surface, are particularly observable. In old people, in whom this form of cancer is most common, there is also a tendency to derangement of the epithelial structures, which may be compared with that which exists also in childhood, as may be seen on almost any boy's hands. Thus we find at certain points a thickening of the layers of the epidermis, forming little flat crusts, either of silvery whiteness, or, when mixed with grease and dirt, of a brownish hue. Similar appearances are also sometimes seen on the backs of the hands, but those are not conspicuous, and must be looked for. Though there are certain variations in clinical features, this cancerous ulcer in its earliest stages of development and most typical form is in shape and size similar to a horn waistcoat button, having a flat, depressed centre, and a narrow, evenly-formed rim. It is not unlike a vaccine vesicle at a certain stage, having a central scab and a narrow pearly border. As the disease advances, which it does very slowly, its ulcerating character becomes more apparent. Warren thinks that, besides the generally received opinion of such cancers originating from normal epithelial structures, the connective tissue cells may be the parents of the cancer cells, the epithelium exerting an *action de présence*. In excising such a growth when of small size, there is no danger that the wound may cause ectropion if near the lid, provided we bring the edges together so as to form a linear cicatrix in a line radiating from the centre of the pupil. The nodulated and unduly sensitive cicatrix resembles a recurrence, but disappears in time in great measure. As regards prophylactic treatment, proper attention should be paid to the hygiene of the skin. The formation of crusts or scabs should be regarded with suspicion; and any tendency to the disturbance of function of the sebaceous glands should be corrected, though Warren has been unable to discover any pathological connexion with these. Crusts may be removed by a weak soda lotion applied on cloths, while it is almost needless to add a daily use of soap is necessary.—*Boston Medical and Surgical Journal*, 8th May 1879.

SCROFULODERMA.—Scrofulous affection of the skin is not in Dr Duhring's experience in Philadelphia very common, and is most usually confounded either with lupus vulgaris or with syphilis inherited or acquired, yet is quite distinct from either of these. There are several varieties. I. That in which the disease begins in a lymphatic gland, which slowly enlarges, gradually breaks down, softens, becomes purulent, forms an abscess, and sooner or

later discharges. II. That in which the deposit occurs primarily in the skin, the lesions being flat, ulcerative, or hypertrophic. The lymph-glands here may or may not be involved, and in many instances entirely escape, the skin being the only structure invaded. This is the form most frequently met with; it attacks chiefly the neck and upper anterior part of the thorax; it is usually unattended with pain, unless the lesions should be so severe, or in such a position, as to be easily injured by clothing, etc. III. The papular scrofuloderm, large and small. IV. The pustular scrofuloderm, large, somewhat resembling ecthyma, and small, not easily diagnosed from the small pustular syphiloderm. When scrofuloderma affects the skin alone, the diagnosis from syphilis is somewhat difficult. Its ulcer, however, is deep with undermined, thin, smooth edges, with a scanty and rather watery secretion, and without any tendency to heal over. It is surrounded by a violaceous area. In the syphilitic ulcer the edges are usually sharply cut, but not undermined; the secretion is much more abundant, and is decidedly purulent, and the areola surrounding it is of a much brighter hue of red. In treatment there are some cases where cod-liver oil seems to do no good. In such iodide of potassium in small doses long continued is very serviceable, and extract of malt is another remedy of value. Locally Dr Duhring recommends bathing the ulcer with diluto liq. sodæ chlorinat., one to four or six of water, and subsequent dressing with vaseline or cosmoline.—*Philadelphia Medical Times*, 24th May 1879.

CHRYSAROBIN AND PYROGALLIC ACID IN THE TREATMENT OF PSORIASIS.—Professor Kaposi, in his new work on *Diseases of the Skin*, thus expresses his experience of these remedies. Chrysarobin (as Liebermann designates the chrysophanic acid of Attfeld) surpasses in actual efficiency all hitherto known medicinal agents in the treatment of psoriasis. It is best employed as an ointment, 1-4 or 1-8 of vaseline. After the greater part of the scales have been removed by means of a bath and subsequent washing with soap, a *small quantity* of the chrysarobin ointment is to be worked into the patches of psoriasis by means of a hardish brush once, or at most twice, a day for several days in succession. During this cycle the skin is neither to be bathed nor washed. Many patches appear remarkably white and destitute of scales after 4-8 inunctions, others only after 12, 16, 20, while the neighbouring skin is tinged a bluish-red or violet-brown. Besides its strikingly rapid curative action on the individual psoriatic spots, it is odourless, and causes no pain when applied to wounded or bleeding points. Its disadvantages are—its staining the linen, nails, hair, and unaffected skin a violet-brown, for which reason it is inapplicable to the region of the face. Farther, it has the peculiarity of exciting inflammation even on sound portions of

skin, which manifests itself as diffuse reddening or painful swelling, or the eruption of acne or boils—forms of dermatitis—which frequently extend over the entire surface, are accompanied by fever and intense constitutional disturbance, and last two or three weeks. A still worse feature is, that on such irritated areas of skin an acute outbreak of psoriasis is apt to occur. These are best avoided by discontinuing the chrysarobin ointment as soon as bright red halos appear round individual patches of psoriasis, and only to apply it again when this reddening has vanished. Especially, it is not to be used on the face, and with great caution in cases of diffuse psoriasis. Chrysarobin belongs to the phenol group, and an allied body, pyrogallie acid, a binoxyphenol, has been investigated and tested by A. Jarrisich in the treatment of psoriasis. The ointment recommended by him: pyrogallie acid 10, vaseline 100, is like the U. chrysarobin, destitute of smell, and not painful, and though not so prompt in its action, is yet valuable. Compared with it this, when applied spread on linen, produces no troublesome inflammatory action. As an unpleasant result of the pyrogallie ointment, there sometimes arises a sensation of dryness and itchiness, in which case its use must be interrupted, and the itchy portion of skin pencilled over with lard or tinct. rusci. Somewhat more alarming is the occurrence of strangury, and the voiding of an olive-green or even tarry-coloured urine, with considerable feverishness and malaise. This is met with in the case of numerous patients whose whole body has been repeatedly anointed with the pyrogallie ointment. The symptoms are due to absorption of the pyrogallie acid, and its excretion by the kidneys. During its circulation through the bloodvessels it becomes changed by oxidation into a tar-like body (like carbolic acid when absorbed), which turns the urine black. The condition soon passes off. Apart from these, there is no drawback to the pyrogallie ointment to be dreaded, and therefore its employment is to be much recommended in practice. It is to be rubbed in once or twice a day, for so long as may be necessary, with a brush of bristles; a bath may be taken from time to time. Both the psoriatic and sound skin is coloured brown for some time by this ointment.—*Pathologie und Therapie der Hautkrankheiten*. Von Dr M. Kaposi. Wien, 1879.

PERISCOPE OF SYPHILOLOGY.

By FRANCIS CADELL, F.R.C.S.E.

TWO CASES OF SYPHILITIC CHANCRE IN UNUSUAL SITUATIONS.—Notes of the cases were sent to the *Chicago Medical Journal* for July 1878 by Dr Rohé.

The first case, that of a widow, æt. 27, was one where the chancre occurred near the tip of the tongue and was followed by a brownish rash. During a round game the patient used a pencil belonging to

a young man, who had a copious eruption on his face. She had no recollection of putting the pencil in her mouth. The second case was a male, æt. 24, who had a syphilitic chancre on the upper lip. He remembered kissing a girl having a sore lip about two months previously.

[The source of infection in neither of these cases was at all clearly made out. Frequently cases of chancre about the mouth are the result of unnatural practices, which patients rarely confess to.]

A CASE OF SYPHILITIC INOCULATION BY A TOOTH-BRUSH.—In the *Lancet*, 31st May 1879, Dr Buchanan Baxter publishes the following case:—

A boy of three was brought to the Blackfriars Hospital with a well-marked papular syphilide and secondary sore-throat. No primary sore was found, but under the edge of the left lower-jaw an enlarged gland existed, which pointed to the gum as the site of inoculation.

The father was suffering at the time from an “ulcerated mouth,” and the mother from a macular syphilide. The fact was elicited that the child had been punished six or seven weeks previously for sucking his father’s tooth-brush.

ON THE MASTURBATION SPERMATORRHEA AND IMPOTENCE OF ADOLESCENCE.—The following is a short abstract from a lecture delivered by Dr Hyde at Rush Medical College, and published in the *Chicago Medical Journal*, May 1879:—

At the outset of the paper the author refers to the period of pubescence in the male when there is an awakening of the sexual instinct, and recommends that at this period some advice if possible should be given to the boy with regard to the proper use of his sexual organs. Amongst other exciting causes of masturbation, a congenitally tight or redundant prepuce is mentioned as the probable foundation of a large proportion of cases, and the following advice is given. “Every father should be advised to see that his son has a fair chance in the struggle of life, when the fittest survive, guaranteeing to him a free prepuce and a clean glans.”

The author believes that the evil consequences which are said to follow masturbation are much exaggerated, and quotes Sir James Paget’s remarks in support of his views:—“I believe you may teach positively that masturbation does neither more nor less harm than sexual intercourse practised with the same frequency in the same conditions of general health and age and circumstances.”

During a part of the author’s professional career he was the surgeon of a man-of-war, and had the opportunity of carefully observing and treating hundreds of men completely cut off from the companionship of females for months at a time, many of them indulging their appetites without restraint in more than one unnatural manner. Since the war he had the opportunity of watching

a large number of men, who, possessed of means and opportunities, had indulged in excessive sexual intercourse, both within and without the pale of matrimony. "There cannot be a question," he says, "but that the last named have been by far the worst sufferers."

He regards true spermatorrhœa as a disease of middle life and advanced years, and significant generally of a grave disorder of the spinal medulla, an unprovoked discharge of semen in the daytime being far more rare than four-leaved clover. He sets down the discharges which masturbators suffer from after abandoning their practices, as prostatic fluid often squeezed out of the urethra by the extrusion of a mass of hardened fæces from the rectum.

When marriage is contemplated by young men who have been addicted to masturbation, there is a common apprehension among them that they will find themselves impotent and unable to perform the sexual act. In their illicit approaches to women the very novelty of the situation has unhorsed them. Unaccustomed to the act, the person, the organs stimulated in the highest degree by anticipation of what is to follow, their seminal vesicles usually distended with a secretion perhaps long pent-up, the prostate lies ready on the instant to discharge its burden—it is no wonder, therefore, that they fail in such intercourse. The married state should be recommended with confidence to every man capable of supporting a wife and family, who is capable of secreting and ejecting semen, and who, once or twice in the week or month, arises from sleep with his penis in a state of vigorous erection.

Part Fifth.

MEDICAL NEWS.

MR HILLIARD of Edinburgh has prepared for an Australian gentleman, who graduated at our University on the 1st ultimo, a very complete and ingeniously-fitted surgical cabinet, which contains in different drawers and presses every instrument which can possibly be required in surgical practice, so arranged as to be capable of immediate inspection and selection. We understand it will find a place in the Sydney International Exhibition.

ARMY MEDICAL SCHOOL, NETLEY.

AT the distribution of prizes to the successful candidates for commissions in the Medical Department of the Royal Navy and the Indian Medical Service, on the 4th August last, the following is the list of the names of those who, having completed their training at Netley, were declared to be qualified for commissions as surgeons:—

For the Indian Medical Service.

No.	Names.	Marks.	No.	Names.	Marks.
1.	Perry, F. F. ** † *	5535	8.	Thomas, W. F. . . .	4398
2.	Dalzell, P. W. . . .	4934	9.	Smith, J. C.	4388
3.	Little, S.	4930	10.	Wortabet, H. G. L. . .	4275
4.	Gimlette, G. H. D. . .	4910	11.	Frenchman, E. P. . . .	4071
5.	Hunter, C. B.	4837	12.	James, R.	3949
6.	Gaisford, M.	4835	13.	Sarkies, S. C.	3846
7.	Murray, C. H.	4580	14.	Bain, D. S. E.	3622

† Gained the Herbert Prize.

** Gained the Martin Memorial Medal.

* Gained the Parkes Memorial Bronze Medal.

For the Medical Service of the Royal Navy.

No.	Names.	Marks.	No.	Names.	Marks.
1.	Gipps, A. G. P.	4642	6.	Clibborn, J. B.	3366
2.	Hunter, J.	4407	7.	Jack, W. G.	2990
3.	Simpson, R. A.	3895	8.	Emson, A.	2713
4.	Donovan, J. F.	3494	9.	Biddulph, R. E.	2377
5.	M'Ivor, R.	3438			

The prizes were distributed by Colonel Allen Johnson, Military Secretary to the Government at the India Office, who addressed them as follows :—

“I congratulate you, Surgeon-General Massey and Surgeon-General Longmore, and the officers so worthily associated with you in the responsible duties you fulfil, on the report we have just heard read. This is not the first nor the second time that similar words of congratulation have been addressed to you, for from the commencement till now your labours have met with unflinching and gratifying success, and I risk nothing in prophesying that as year succeeds year a similar tale will have to be told by my successors in this place; for to such institutions as this time does not bring decay, but strength and ever renewed vigour.

“Gentlemen, it is not a mere phrase of empty compliment, but the expression of sincere conviction, when I say that India owes much to you, for it is due to you in no slight measure that the gentlemen who leave Netley, session after session, to join the Indian Medical Department, add so much to the prestige of that distinguished service, and are so very appreciable a gain to that intellectual life with which it is England's duty, as I am sure it is her aim, to inform the vast though still inert masses of our Asiatic fellow-subjects.

“Gentlemen, I regret for your sakes that you are not to-day to be addressed by one who can speak with the weight and authority of the distinguished officer who occupied this place last year; but I am glad for my own sake, and grateful for the opportunity afforded me of speaking on one or two points which I have greatly at heart, and of bidding you God-speed to the field in which you have elected to labour. Of what that field is, what its opportunities, what its scope, you may have already formed some conception, but your conception will have fallen short of the reality; its oppor-

tunities are so various, its scope so vast, that its immensity almost staggers one. Yet believe me, it is not a field in which it is difficult to labour, for it is one which yields a ready and abundant harvest, and it possesses an almost inexpressible charm,—a charm which is at once a spur, a reward,—a charm which is hardly to be found in the more groovy cut and dried life at home, in that you see the actual growth and progress of your work, and year by year discover the very appreciable outcome of your labours

“With regard to those labours I could not, even if I would, be guilty of the impertinence of saying anything in respect to their professional aspect; what we have heard to-day is ample proof that you have been in wise hands, and had the wisdom to profit thereby. Even were I so inclined, I am mercifully protected by an ignorance so complete as to convince even myself of the folly of that—as Coleridge calls it—ultra-crepidaciousness from which the angels proverbially shrink, for if it be true that at forty every man is a fool or a physician, I fear I must admit the soft impeachment that I am not a physician.

“Neither do I wish to dilate on the material prospects the service holds out to you. On a former occasion my old friend, and now, I am glad to say, my valued colleague, Sir Joseph Fayrer, told you what are the prizes of the Indian service, and what fair prospects it offers to zealous and earnest workers; but, situated as I am, I would prefer not to enter into details, for details are terribly compromising.

“I remember during the campaign in Oude in 1857–58, the present governor of the Woolwich Academy, whose duties in the field were not very clearly defined, asked the chief of the Staff, the late Lord Sandhurst, for some definite instructions for his guidance, instructions which Sir William Mansfield found it neither convenient to give nor to refuse. Sir William, taking thought, very impressively replied, ‘Your instructions are that you shall on all occasions take a comprehensive view of your administrative responsibilities,’ a reply which I have always considered a masterpiece of the art how not to say it. Profiting by this example, I will confine myself to generalities, merely saying, though I believe with perfect truth, that no medical service in the world offers better prospects of professional advancement and even pecuniary success.

“But I do wish to say a few words on some of your social duties in that new country. Of course I do not speak of your social duties in connexion with the society of your countrymen. You, gentlemen, are at least as able to instruct me on such points as I to instruct you. But beside and around the few thousands of our fellow-countrymen live the many millions of our fellow-subjects: it is of these I would say a few not altogether, I hope, idle words.

“I will not discuss the vexed question of whose the fault is, if indeed—and it is open to question—fault there be, but the fact cannot, I fear, be gainsaid that between us and them there is a great gulf fixed,—not, I am persuaded, an impassable gulf, for it

may be, it can be, and I am convinced it will be bridged over if not altogether filled up. But at present it still yawns between us.

"In addressing myself especially to you, Gentlemen, on this subject, I am influenced by the strong impression that the opportunity of effecting this work is placed more unreservedly in your hands than in those of any other members of the service to which we have the honour to belong.

"The magistrate is obliged, to some extent, to hold aloof from any attempt to gain the intimacy of the native gentlemen living within his jurisdiction. It is unfortunate that this should be so, but the reason is not far to seek. We see a survival of it even at home in the custom still in force, which obliges the judge of assize to take up his abode in a stuffy lodging in the assize town, instead of resorting to the better ventilated comforts of a modern hotel.

"The regimental officer has comparatively few opportunities, while the engineer, having to settle through whose fields a road shall go, and to whose fields a canal shall not come, is, though in a less degree, debarred from much the same reason as the magistrate.

"But with you, Gentlemen, it is exactly the reverse. The natives, rich or poor, have nothing to apprehend at your hands, while what they seek of you it will be your duty no less, I am sure, than your pleasure to afford them. Like 'the Pickwick, the Owl, and the Waverley pen, you come as a boon and a blessing to men,' or, to speak in the more serious tone the subject demands, you come not as the ministers of its power, but as the embodiment of the goodwill of the State, for you enter the villages of the poor and the homes of the rich with 'healing on your wings.' Therefore it is I say you have opportunities of bridging the gulf which others have not, and what I would ask you to do is to use those opportunities.

"Now, far be it from me to suggest the practice of that goody goody, mawkish, fussy, interfering patronage which usurps and abuses the great name of philanthropy, and which is even more offensive to its subject than disdain, but that you shall treat them with that genial, good humoured friendliness which underlies the British surface. It was this characteristic, which he possessed to a very marked extent, that made Lord Mayo one of our most popular and personally influential governors. Without sacrificing one jot of dignity, he made real personal friends of the chiefs; and this is the line I would have you take, not with the native gentlemen only, but with the middle classes and the villagers whenever the chance is afforded you. To do so will add much to the interest of your lives, for you will find in their lives a study full of novelty and fruitful of results, throwing strange and unexpected light on many social problems of our time.

"In the north, especially, you will find manly, simple natures, which respond readily to friendly advances; and I beg you to put aside, as you would any other falsity, the cant which fools still repeat, that the natives of India have no gratitude. You might

as well say they have no stomachs, or that if you tickle them they will not laugh, or if you prick them they will not bleed! But never in your intercourse with them forget that you represent the ruling race, and by your bearing, your "self-reverence, self-knowledge, self-control," justify your position. Ever show the best side of the British character, its manliness, its good faith, its integrity, for it may be that some of those you meet will have no other opportunity than from you of judging of *our right to be there*.

"Though I am aware that a considerable number of you have chosen the Navy as your profession, I have confined my remarks to India, and for this reason, that more than thirty years spent in that country have given me some insight into life in India, whereas I know next to nothing of life at sea; and this, I submit, is a very sufficient reason, for, if

'It's a pity when charming women
Talk of things they don't understand,'

it would be simply intolerable for a by no means charming elderly gentleman to attempt to do so.

"I must say, however, that I have always held it to be a subject for very legitimate pride to belong to a service which is admitted on all hands to be unequalled. Of no army can this be positively said. They and we may think the German army the first, but it is quite conceivable that the French or the Russians might think otherwise; but with the British Navy no comparison is possible. It is 'Eclipse first, the Field nowhere!' Of such a service you may well be proud to be members. But I have one hint to give, which I think applies to the Navy no less than to India—keep a hobby, and give it daily exercise. It does not, for the object I have in view, greatly signify what that hobby is—art, music, literature, sport, or an ology. Of course, it will be better for yourselves, and better for us all, if you pursue some subject which will add to the knowledge of the world; whether it will be some such invaluable contribution to science as so many distinguished members of your service have given—a history of the snakes of India, deep-sea dredgings, or an exhaustive code of medical jurisprudence. But as all cannot attain to such excellence, at least take up some persistent occupation or amusement, and follow it up; it will help to fill up those deadly monotonous hours of which, without some such resource, you are fated to experience so many in both the lines you have chosen.

"Gentlemen, I will not detain you longer, but will conclude as I began, by expressing my gratification at having been allowed to address you on this occasion, and by wishing you most sincerely health, happiness, and success in the careers you are now entering on."

At the request of Surgeon-General Massey, C.B., Dr Norman Chevers addressed the Indian students, congratulating them upon the career which they had chosen, but warning them not to be too

ardent in their expectations of immediate success. They were entering a service in which the general level of professional qualification is remarkably high; consequently, reputations for singular merit are won slowly and with difficulty. To rise in India a man must possess high qualifications, not only as a surgeon, but as an officer and a member of society. He went down the roll of Netley prizemen, which is affixed to the wall of the theatre. Kenneth McLeod, Cameron, Macrae, Lethbridge (formerly one of his own pupils), David D. Cunningham, Lewis, all had obtained reputation in India, where, health being preserved as it generally is, merit will always eventually come to the front. They were about to enter a society of high intellectual culture, in which the character of each individual is perfectly well known both to Europeans and natives. As there must be no blood on the judge's ermine, there must be no stain on the character of the Indian physician, which lies open, as if under a microscope, to all his world.

He spoke of the great social influence which the cultivated physician exercises in India; and referring, not by name, to one of their own professors now present, declared that upon the death of his colonel, immediately after landing in Calcutta, at the outbreak of the Indian mutiny, the surgeon, as the senior officer in the corps and a man of noble character, became, morally and intellectually, the commander of one of the finest regiments in the British service. He wished that he could accompany them to the scene of their labours and his own, to a course of life which, although fraught with difficulty, is singularly free from the petty cares and sordid jealousies which too often embarrass an English career.

The meeting was attended by a number of visitors, including several military and naval medical officers.

CORRESPONDENCE.

MENTHOL: AN ANTI-NEURALGIC.

To the Editor of the Edinburgh Medical Journal.

BRACO, PERTHSHIRE, 5th August 1879.

SIR,—Allow me to mention that in neuralgia of the face I have several times applied a solution of menthol—a solid derived from the Chinese or American Oil of Peppermint, elsewhere referred to as a powerful antiseptic, and theoretically anti-neuralgic agent.

The solution used was, on a first trial, one of the melted crystals only—but, to avoid the irritation of the eyes from the great volatility of the remedy, I afterwards used a mixture of—Menthol, gr. i.; sp. vin. rect. ℥l.; and ol. caryoph. ℥x.—shaken, and then painted over the affected tract. Relief was had in from two to four minutes, and within one or two minutes at most after this, the then existing attack was cured.

This, I think, goes far to show that the Chinese custom of

painting with oil of peppermint in neuralgic cases owes its reputed efficacy to menthol as its active constituent.

In cases of toothache, I have cleaned out the cavity of the tooth with a little cotton-wool, then placed a single crystal on another small piece of the wool, inserted it, and the pain instantly disappeared. And a tincture of strength 1 to 50 is equally effective.

From what I have said, it is easy to go to sciatica, and I would recommend a trial of the crystals, melted, with a very small quantity of an essential oil, applied over the back of the thigh, and, if necessary, over the area of distribution of the popliteal and posterior tibial nerves as well.

Intercostal neuralgia and brachialgia would also probably be relieved by the use of menthol.¹—I am, etc.,

A. D. MACDONALD, *Stud. Med. Edin.*

MURCHISON MEMORIAL.

To the Editor of the Edinburgh Medical Journal.

7 HERIOT ROW, EDINBURGH, 8th August 1879.

DEAR SIR,—At the request of the Lecturers in the Edinburgh School of Medicine, I beg to hand you the enclosed copy of Resolutions come to by them with regard to the Murchison Memorial, for publication in the *Edinburgh Medical Journal*.—Yours faithfully,

CLAUD MUIRHEAD.

Which day the Lecturers in the Edinburgh School of Medicine met, when, *inter alia*, the subject of the Murchison Memorial was brought before them, and there were then discussed the terms of competition for the proposed memorial scholarship, when awarded in Edinburgh, as explained in the circular issued by the Memorial Committee, viz., that “in Edinburgh the Scholarship will be administered by the Medical Faculty of the University, and be open to all its medical undergraduates,” resolved—

1. To protest against the unfair and invidious exclusion of the students in this School from participation in the competition for the proposed Murchison Memorial Scholarship, while the students of all the London Medical Schools are to be permitted to take part in it.

2. To endeavour to get the promoters of the scheme to remove this restriction, and to make and publish the necessary alterations both as regards the competitors and the judges of the award in Edinburgh.

3. To withhold all countenance and material support from the scheme until such amendments have been made and duly notified.

4. That a copy of these resolutions be sent to the secretaries to the Memorial both in London and Edinburgh, with a request that they be immediately submitted to their respective committees for consideration and adjudication thereon.

¹ At the same time, of course, it will not be overlooked, that in the more severe cases constitutional as well as local measures should be adopted.

5. That a copy of these resolutions be sent to the editors of the various Medical Journals for publication.

ALEXR. KEILLER, *Chairman of Lecturers.*

CORRECTION.—Instead of the remarks by Mr D. J. Hamilton, as printed on page 165 of the August Journal, read the following:—

Mr D. J. Hamilton thanked the Society for the cordial reception given to his paper, but felt that he was hardly entitled to the high praise accorded to him by the members of the Society. The observations had been the work of several years. From his experiments on the solution of catgut, he believed that if the fluids in a wound had an acid reaction, the catgut would be longer in disappearing, but would ultimately also be dissolved. It would undoubtedly, however, disappear much quicker in a wound having an alkaline reaction. The cause of the disappearance in either case probably was the conversion of its albuminoids in the one instance into a soluble acid-albumen, and in the other into a soluble alkali-albumen. Although he believed that the catgut in a wound was not destroyed by the direct action of cellular structures, yet he did not deny that these would be highly instrumental in causing its removal after it had undergone disintegration, and was rendered fit to be incorporated by them. Dr Foulis's remarks were of great interest, more especially as lending support to the theory advanced as to the formation of granulations. In reference to Mr Chiene's objection to twenty-four hours being too soon for granulations to appear, he was merely quoting the observations of Sir James Paget and Mr Lister. So short a time must, of course, be looked upon as the extreme limit; but the importance of the statement lay in the fact that fully-developed capillaries were produced in the granulations within this time. It could, on that account, hardly be believed that they were newly formed.

The title of the paper was "On the Process of Healing," not "Notes on the Healing of Wounds."

PUBLICATIONS RECEIVED.

EDWARD A. BIRCH, M.D.,—Goodeve's Hints for the Management and Medical Treatment of Children in India. Thacker, Spink, & Co., Calcutta, 1879.

Compulsory Vaccination,—Speech by Mr P. A. Taylor, M.P. W. Young, Lond., 1879.

J. HUGHLINGS-JACKSON, M.D.,—Remarks on the Routine Use of the Ophthalmoscope in Cerebral Disease. J. & A. Churchill, London, 1879.

E. KLEIN, M.D., and E. NOBLE SMITH, L.R.C.P.,—Atlas of Histology. Part VI. Smith, Elder, & Co., London, 1879.

Lectures on the Theory and General Preven-

tion and Control of Infectious Diseases, by James B. Russell, B.A., M.D.; and on Air, Water Supply, Sewage Disposal, and Food, by Wm. Wallace, Ph.D., F.C.S. James Maclehose, Glasgow, 1879.

Transactions of the Pathological Society of Philadelphia. Vol. VIII.

Twenty-first Annual Report of the General Board of Commissioners in Lunacy for Scotland.

EDWARD JOHN WARING, M.D.,—Bibliotheca Therapeutica, 2 vols. New Sydenham Society, London, 1879.

W. SPENCER WATSON, F.R.C.S.,—Eyeball Tension. II. K. Lewis, London, 1879.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*The Use of the Volsella in Gynecology.* By ALEXANDER RUSSELL SIMPSON, M.D., F.R.S.E., Professor of Medicine and Midwifery and the Diseases of Women and Children in the University of Edinburgh.

A YOUNG graduate just about to enter upon practice, guided by his text-books on midwifery and the diseases of women, would not think of supplying himself with a volsella as a needful part of his equipment for that department of his work. He would be duly impressed with the need and usefulness of specula, of sounds, of tents, of tenacula, forceps, etc., but if he thought of the volsella at all, he would only think of it as a superfluity. Thomas,¹ Barnes,² Emmet,³ Courty,⁴ Gallard,⁵ Leblond,⁶ Schroeder,⁷ Sinéty,⁸ give no place to it among the instruments required for gynecological exploration.⁹ Yet the volsella has long been a familiar instrument in the hands of experienced gynecologists. The great French surgeons of the last generation, who occupied themselves with the diseases of women, made frequent use of it. Sir James Simpson¹⁰ quotes Lisfranc to the following effect:—"Let a speculum be introduced so as to embrace the cervix uteri, and thus prevent the uterus falling by its own weight, then bid the patient bear down as if at stool, and you will perceive that, as the instrument descends, the

¹ *Diseases of Women*, 1875.

² *Ibid.*, 1878.

³ *Principles and Practice of Gynecology*, 1879.

⁴ *Traité pratique des maladies de l'utérus*, 1866.

⁵ *Leçons cliniques sur les maladies des femmes*, 1873.

⁶ *Traité élémentaire de chirurgie gynécologique*, 1878.

⁷ *Handbuch der Krankheiten der Weiblichen Geschlechtsorgane*. Leipzig, 1874.

⁸ *Manuel Pratique de Gynécologie*. Paris, 1879.

⁹ Since this was written, the section in Pitha and Billroth's *Handbuch der Allgemeinen und speciallen Chirurgie* on "Die Untersuchung der Weiblichen Genitalien," by Chrobak, has appeared. It gives a fair account of the exploratory uses of the volsella, p. 5.

¹⁰ *Selected Obstetrical and Gynecological Works*, A. & C. Black, 1871, vol. i. Footnote, p. 621.

uterus follows it to the extent of an inch or so from the orifice of the vagina—an immense advantage when the surgeon wishes to bring down the uterus to near the vulva. In cases requiring operation about the cervix, all that the surgeon has to do is to lay hold of the os uteri with a hook and draw it gently down until it comes fairly within sight; this may be effected without difficulty and without much inconvenience to the patient.”

Dupuytren,¹ in describing the removal of a fibroid, speaks no less distinctly as to the descent of the uterus when traction is made on the tumour—“The substance of the tumour is caught in the bite of a volsella. Moderate traction is employed, and the patient also requested to strain down as if in labour. She does this readily, so that the tumour soon appears close to the external orifice. It is now grasped with a second pair of forceps, and gentle traction, aided by the patient’s efforts, brings it to the vulvar orifice, which it soon passes, and the cervix uteri itself is exposed.”

I reproduce here a woodcut (see Fig. 1) from the well-known work² of Jobert de Lamballe on vesico-vaginal fistulæ, in which it will be seen that the cervix is pulled down by means of two pairs of Museux’s forceps—until the os has been made to pass over the perineum, for the purpose of exposing a fistula in the vaginal roof. In an address³ on “Obstetrics and Gynecology One Hundred Years Ago,” I described the use of the volsella in a case of this kind where I had the privilege of witnessing an operation for the cure of fistula by Professor Stoltz.

In his “Memoir on the Uterine Sound,” Sir James Simpson⁴ points out that the uterus “may be drawn down by instruments till the cervix reaches the external parts themselves, or even protrudes beyond them—a circumstance which facilitates immensely the operation of the excision of this part of the organ.”

Goodell⁵ has given a brief but very suggestive account of the use of the volsella, which I quote in full. He says, “One word here on the subject of the volsella. Since it maintains its hold better than the tenaculum, it is to me one of the most precious instruments in my bag, amounting in value almost to a third hand. Apart from using it as above described in re-dressing or straightening out any kind of version or flexion of the womb, it subserves other useful purposes. By hooking down the cervix and holding it steady, it materially aids in the introduction of sponge-tents. For the same reason, upon the removal of the tent it renders the exploration of the uterine cavity with the finger

¹ *Leçons orales de clinique chirurgicale*. Tome troisième, p. 227.

² *Traité des fistules vesico-utérines*, etc. Paris, 1852, p. 4.

³ *Obstetrical Journal of Great Britain and Ireland*, 1876, IV., 587.

⁴ *Selected Obst. Works*, p. 621. See also *Clinical Lectures on Diseases of Women*, p. 170.

⁵ *Some Practical Hints for the Treatment and the Prevention of the Diseases of Women*. Reprinted from the *Medical and Surgical Reporter* for January and February 1874.

very much easier than by the usual plan of forcing the womb down on the examining finger by suprapubic pressure, a pro-

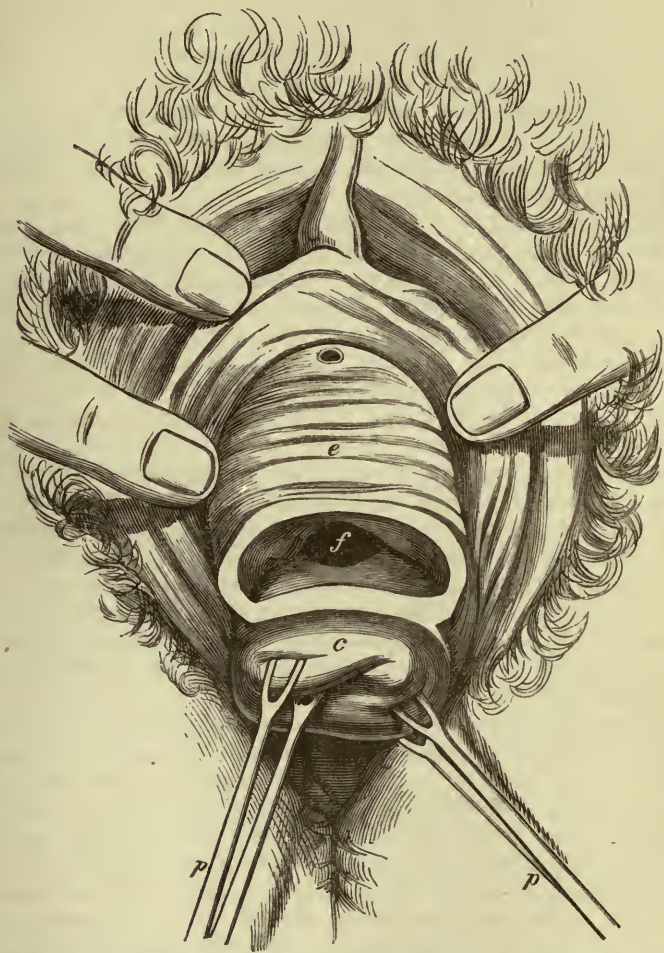


FIG. 1.—The Uterus hauled down to bring a vesico-vaginal fistula within reach (Jobert de Lamballe). *e*, anterior vaginal wall; *f*, fistula; *c*, cervix-uteri: *pp*, Museux's forceps.

cedure always painful, and in a fat woman very difficult of execution. By thus lowering and fixing the womb, it facilitates very materially the removal of intrauterine polypi, or the scraping away of benign or malignant growths from the cervix or the fundus. In such cases I usually apply it without the aid of the speculum, and generally seize hold of the anterior lip. In re-dressing versions, a mechanical advantage is gained by seizing

hold of that lip of the cervix whose name does not correspond with that of the version. But in flexions, as one object of the traction is to stretch out the flexed side the most, that lip should be seized whose name corresponds with that of the flexion. This advice is theoretically correct; but it may not always be practicable."

Batley, in an article on the "Extirpation of the Functionally Active Ovaries,"¹ says, "The cervix is seized with a stout volsella, the uterus drawn down under the pubic arch, and the vaginal membrane and cellular tissue incised with scissors, say one and a half inch in the median line of the posterior *cul-de-sac*, beginning immediately behind the uterus."

Næggerath, in his very original article² on "The Vesico-vaginal and Vesico-rectal Touch," says, "If we attempt to explore the upper section of the uterus, it must be pulled down by means of a double hook, the points of which are turned outwards, introduced into the cervical canal, and it is perfectly safe to dislocate the uterus downwards about an inch and a half. When this is done, with one finger in the bladder and one in the rectum, we are enabled to thoroughly explore the whole of the uterus, from the fundus down to the external orifice."

The most satisfactory account of the use of the volsella we find in the writings of Hegar—first, in his *Operative Gynecology*,³ and again still more fully in his clinical lecture on Gynecological Diagnosis.⁴ In that lecture he begins his reference to the use of the volsella by saying, "For some years we have made use of a very sure, and at the same time innocent, method, which consists in applying a volsella to the vaginal portion to fix the uterus, to draw it somewhat downwards, and, where necessary, to make lateral movements with it."

In a communication which I read to this Society on "The Complete Evacuation of the Uterus,"⁵ I showed how the use of the volsella facilitated the access of the finger to the interior of the uterus.

In all these quotations, however, with the exception of those of Goodell and Hegar, it will be observed that the mention of the volsella comes in almost incidentally, or with reference to some special exploration or operation; and as I become more impressed with the importance of the aid it furnishes us in various directions, I am anxious to press its value upon the Fellows of this Society, and to claim for it a permanent place in every text-book on gynecology, and in every gynecologist's armamentarium.

¹ *American Gynecological Transactions*, i. 115.

² *American Journal of Obstetrics*, viii. 135.

³ *Die Operative Gynaekologie von Hegar und Kaltenbach*, p. 49. Erlangen, 1874.

⁴ *Zur gynäkologischen Diagnostik. Die Combinirte Untersuchung*. Volkmann's Sammlung, No. 105.

⁵ *Transactions of Edinburgh Obstetrical Society*, vol. iv. p. 221. *Edinburgh Medical Journal*, xxi., 1876, May 1876.

THE INSTRUMENT.

Let me say at once that there need be nothing peculiar in the construction of the instrument. Volsellæ of different sizes are very useful, and sometimes it is absolutely necessary to have them large and long for the seizure and down-dragging of big intrauterine fibroids. In such cases I find a pair of toothed forceps (Fig. 2) very helpful, which Sir James Simpson had constructed, with separable blades, locking like a pair of Smellie's midwifery forceps, and capable of being fixed together after they were locked with a screw-pin, serving as a joint. But the instrument for daily use in the common run of cases is a simple small curved volsella of the size here represented (Fig. 3), each stem ending in three short teeth. Sometimes single-pronged or two-pronged volsellæ with longer teeth may be employed; but I get the greatest amount of service from the small three-teethed variety, which it is better to have made with a catch on the handles like those on Pean's artery forceps, or such as is shown in the woodcut.

MODE OF EMPLOYMENT.

We know the cervix uteri is, richly enough supplied with sensory nervous filaments. For the most part, however, they run to the sympathetic ganglia, and but few, if any, have direct communication with the cerebro-spinal system. A prick or a crush of the lips is, therefore, even when perceived by the individual, not a cause of acute or lengthened suffering. The cervix uteri is not only very much less sensitive than the labia pudenda, it is even far less sensitive than the walls of the vagina in the immediate vicinity. I find that when it is touched with ice the patient does not experience the sense of cold; and the touch of a cautery on the surface does not cause her pain. Hence, we feel free to use the volsella without fear of adding in any marked degree to a patient's distress.

When either the anterior or the posterior or both of the lips have been laid hold of, first the cervix, and with it the whole uterus, can be pulled forwards or backwards, to the right or to the left, but, above all, it can be dragged downwards. The amount of force required to do this on the living subject is exceedingly slight, as I find, on observation of a series of cases, that a force of from 3 to 7 lbs. is sufficient to bring the os uteri to the ostium vaginæ, without any discomfort to the woman.

I had a favourable opportunity recently of studying the mode of descent of the uterus in the grasp of a volsella in a case where the urethra had been dilated for vesical explorations, where the finger introduced into the bladder could follow down accurately the movements of the uterus and anterior wall of the vagina. As it descends, the cervix brings with it the posterior angle of what Dr Hart¹ describes as the pubic triangle or anterior seg-

¹ *Edinburgh Medical Journal*, April 1879.

ment of the pelvic floor; that is to say, the anterior wall of the vagina, the bladder, and uterus are brought down *en masse*. The posterior wall of the vagina becomes inverted

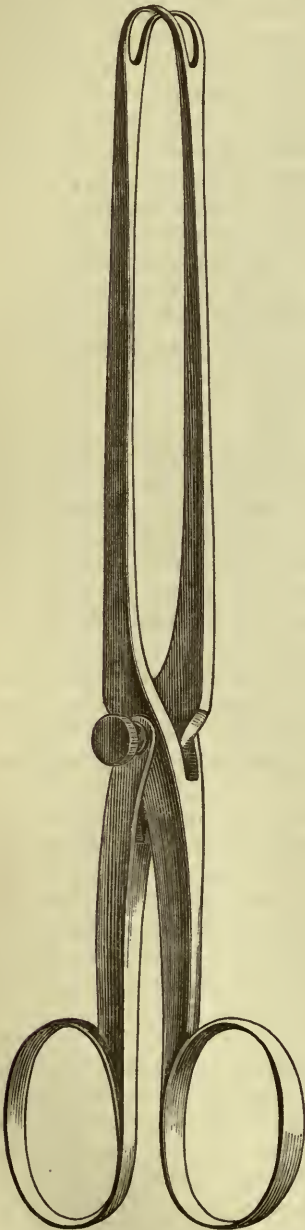


FIG. 2.—Volsella for seizure of intrauterine fibroids. (Two-thirds size.)

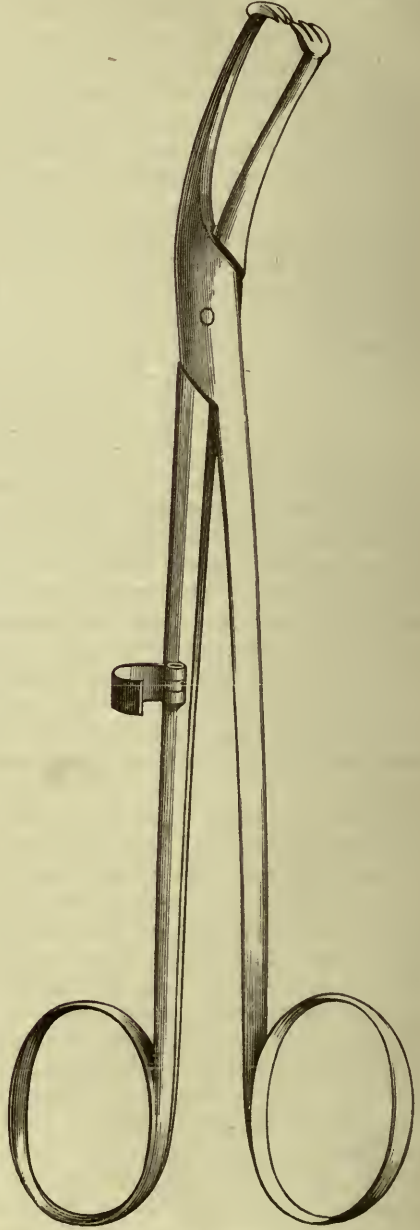


FIG. 3.—Ordinary volsella. (Full size.)

from above downwards more gradually, being separated from its loose contact with the anterior wall of the rectum, the canal of which remains unaffected (Fig. 4). In general the organ must descend so far as to bring the os clear through the vulva before the utero-sacral ligaments are put upon the stretch. It is when these become quite tense that the patient has any sensation of special discomfort. We need not stop to point out that the uterus in this temporary position does not present the usual relations of the prolapsed one.

In employing the volsella it is obvious that it will usually be a comfort, and sometimes a necessity, to have a nurse or assistant at hand to keep it, or some of the other instruments, or parts of the patient, in proper position. But this aid can often enough be dispensed with by the operator tying a tape or string round the handle's of the instrument, and giving it to the patient herself to hold, or fixing it on a part of his own dress.

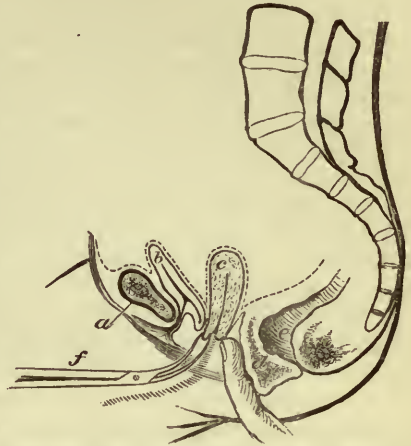


FIG. 4.—Vertical section of Pelvis, showing relations when Uterus is hauled down. *a*, symphysis; *b*, bladder; *c*, uterus; *d*, perineum; *e*, rectum; *f*, volsella.

SPECIAL USES.

I. **EXPLORATORY.**—Let me ask attention, to begin with, to the services it will render us in the Exploration of various conditions of the pelvic organs.

1. *To bring Parts within Range of Vision.*—In the great run of cases, two fingers introduced into the vaginal canal can be used to pull back the perineum, and then a finger, or sound, or pair of dressing forceps, or special depressor, pressing forward the anterior wall of the vagina, brings the cervix into view. Instead of the finger, sound, or other instrument, let the practitioner use such a volsella as I have indicated, and he will find it easy to lay hold of the anterior lip of the uterus, so as to bring os, cervix, and when necessary vaginal roof, within full range of vision.

2. *To bring Parts within Reach of Touch.*—When the uterus is thus drawn upon, it is obvious that the finger will have more easy access to the higher parts of the uterus, whether it be passed first through the cervix into the interior of the uterus, or whether it seeks to determine the condition of it and its adnexa externally, and its relations through the vaginal canal, through the rectum, or in rarer cases through the bladder, or through two or more of these

simultaneously. We thus get a better impression, *a*, of the size of the uterus, whether that be normal, lessened, or increased; *b*, of its position, when it is the subject of version or flexion in one or another direction; *c*, of its relation to pelvic tumours, whether it be attached to them or independent in its mobility; *d*, of the size, situation, and circumstances of the ovaries and other parts around the uterus. I do not need to state that the use of the volsella which I am describing does not exclude the employment of other instruments for exploration, and in some cases, after laying hold of the uterus with it, or before doing so, it will be convenient to make use of the speculum, or more rarely of the sound.

II. OPERATIVE.—Without entering into details of the various Operations, I may point out some in which it is either absolutely necessary or extremely useful to bring down the uterus, or simply to fix it with a volsella.

1. *Operations on Interior of Uterus*.—It will be found very helpful, 1st, in *Introducing* stem-pessaries, tents, medicated arrows, or the sound, armed with cotton wadding, and charged with various medicaments; 2d, In the *Removal* of foreign bodies, or of neoplasms and fragments of ova, from the cavity of the uterus, whether with the finger or by means of a curette or other instrument.

2. *For Application of Elastic or Esmarch Ring*.—To carry out the various operations on the vaginal portion of the cervix bloodlessly, an indiarubber umbrella ring may be carried up to the level of the isthmus uteri by passing it over a volsella that has grasped the whole thickness of the cervix in its embrace, or over two volsellæ, one applied to the anterior, the other to the posterior lip.

3. *Operations on the Vaginal Portion of the Cervix*.—In the many cases where recourse must be had to operative interference with the os and cervix uteri the use of the volsella is simply indispensable. Such are, 1st, Division of the cervix; 2d, Amputation of its infra-vaginal portion; 3d, Emmet's operation for the repair of lacerations of the cervix; 4th, Removal of polypi, etc.

4. *Operations for Rectifying Displaced Uteri*.—In restoring the uterus to its proper position in cases of flexion, version, and inversion, the volsella facilitates immensely the reposition.

5. *Operations on the Vagina*.—In attempting the closure of fistula high up in the vaginal cavity, or the removal of neoplasms in that situation, the manipulations can in many cases only be satisfactorily carried out when the uterus has been pulled downwards and backwards with the volsella.

6. *Intra-Peritoneal Operations*.—In cases where we seek access to the peritoneal cavity through the vaginal roof, as for the removal of the ovaries, extra-uterine ova, etc., the volsella, grasping the cervix, pulls it forwards and downwards, and makes tense the structures that require to be divided.

CONTRA-INDICATIONS TO USE.

I have said that in advocating the more frequent use of the volsella I do not wish it to be understood that it should supplant the use of the speculum, sound, and other instruments with which the profession has long been more familiar. I would now add that, as in the employment of these instruments, so in the employment of this, it must always be borne in mind, that notwithstanding the great assistance which we obtain from it, there are conditions, physiological and pathological, which forbid its application.

I. PHYSIOLOGICAL.—As a general rule, which has but rare exceptions, the use of the volsella must be abstained from in the two physiological conditions: 1, of *Menstruation*; 2, of *Pregnancy*. Even in cases where morbid conditions of menstruation or pregnancy call for active interference, the wise practitioner will use the volsella as he would practise the simplest touch in a menstruating or pregnant female, with more than the usual care and delicacy.

II. PATHOLOGICAL.—1. *Neoplasms* rendering the tissues of the cervix particularly friable or hemorrhagic prevent the laying hold of it with the volsella. But the great pathological contra-indication to its use is found in—2. The *Inflammatory changes*, not only acute, as of any of the pelvic organs, but even chronic, as especially in the cellular tissues. Happily the cases where the volsella would be most likely to cause pain and trouble are also most likely to be diagnosed and treated without its aid, so that we have in them no great inducement to have recourse to its employment.

ARTICLE II.—*A Short Sketch of the Recent Visitation of the Plague in Bagdad and its Vicinity, 1867–1877.* By JOHN WORTABET, M.D., Physician to St John's Hospital, Beyrout; Corresponding Member of the Epidemiological Society, London, and of the Medico-Chirurgical Society of Edinburgh.

(Continued from page 228.)

AVICENNA describes the plague as a pestilential fever, not necessarily characterized by much external heat, but, when the disease is severe, always accompanied by great internal distress. The tongue is dry, and there is much thirst, complete loss of appetite, and often vomiting of bilious or black matters. The intestinal evacuations are unnatural and generally loose, frothy, fetid, and sometimes black. The urine is watery, and blackish. The pulse is frequent and small, the respiration hurried, and the breath fetid. There is precordial pain, and the spleen is enlarged. The prostration is extreme, and there is a disposi-

tion to fainting. There is much restlessness, accompanied by delirium and insomnia, which often terminate in coma or convulsions. He mentions also red, or reddish spots and ulcers, probably the petechiæ and carbuncles of modern writers. He says nothing of buboes, but another ancient Arabian author quotes Galen as pointing the attention to "swellings similar to erysipelas and anthrax." Both this author and Avicenna, however, have separate chapters on bubonic swellings, which the latter describes as attacking the glands, both secreting and lymphatic, during an epidemic of pestilential fever.

Dr Russel describes the fever as a series of exacerbations and remissions. After noting the fact mentioned by Avicenna, that while the external heat was slight, the internal sense of distress was extreme, he says,—“Sometimes this heat soon became general and intense, at other times particular parts only were affected therewith; and it seldom continued many hours together alike, but remitted and returned with considerable but unequal force several times in a day. The face, in the exacerbations, became florid, and was often changed from a deep scarlet to a livid colour, resembling that of a person almost strangled. These appearances, again, would suddenly give place to a cadaverous paleness. The eyes soon lost their lustre and acquired a kind of muddiness, and the countenance of the greater part of the sick was ghastly and confused beyond description.”

It is very much to be regretted that up to this time we have no thermometrical records of the plague-fever; but most probably they would show a much higher temperature than is generally allowed. The application of the clinical thermometer has shown that the most practised hand may be often deceived. The pulse appears to vary, but generally is frequent and small, sometimes full. The pain in the head and the loins is a very noticable feature in the earlier history of the fever before stupor sets in, and so is the vomiting, which at first is bilious, and then changes into a dark fluid, containing probably vitiated bile or blood.

The *buboes*, which are generally believed to be pathognomonic of the disease, do not appear to be essential to it. When they do come out, they begin early in the disease by pains darting into the axillary, inguinal, or parotid regions, and appear there in the form of a small tumour, which may increase from the size of an olive to a hen's egg. Judging from their locality, and from the post-mortem examinations made by Clot Bey in Egypt, they seem to be enlarged lymphatic glands, including the one which lies on the parotid. They are described as hard and painful, generally suppurating towards the end of the disease after the tenth day. Their development is held to be a favourable sign of recovery. They are stated to vary in colour from that of the natural skin to deep red or livid. They may be single or multiple, and the order of their frequency as to site is said to be as follows: the groin,

the arm-pit, the cervical and parotidean regions, and very rarely the popliteal.

In a considerable number of cases *carbuncles* break out indiscriminately on different parts of the body. Some authors divide them into two classes,—the real *anthrax* and *gangrenous pustule*; others make three varieties; while others still make no distinction between them except in degree. They are often multiple, and sometimes attain a very considerable size; one case is mentioned where the diameter was four inches. Dr Russel describes the pestilential carbuncle as a “painful pustule like an angry confluent pock surrounded by a circle of a deep scarlet tinge, which soon became livid, and was attended with an intense burning pain . . . they increased from the size of a large pock to the extent of an inch and a half in diameter, sometimes, though rarely, to three inches.”

The *rash* (petechiæ) appears only in the latter stage of the disease, and always portends a fatal result. It is described as red spots on the skin of the extremities and trunk—often dark, and not easily distinguished from the typhus rash.

Like other pestilential diseases, the duration of plague is not long. Its period of incubation does not seem to be certainly known, but those who have observed the disease are inclined to limit it at the most to ten days. It is said that after the actual invasion convalescence may set in as early as the second day, or death may come on after a few hours. These must be extreme cases. Generally it is fatal during the first week—about the fifth or sixth day. If the patient survives the first week the danger is considerably lessened. The period of convalescence depends much on the length of time occupied by the fever and on the severity of the symptoms. The mortality differs in different epidemics, but it is generally believed that more than one-half of the cases terminate fatally.

From former visitations, as well as from those observed in later times, the popular belief is that plague rages most violently during spring, and that excessive heat or cold checks it; and from the Report on the recent epidemic in Mesopotamia, it appears that after the temperature had reached a certain point the plague began to subside, and by the time it reached 40° C. the epidemic ceased. This confirms the general law, that dry heat is a powerful disinfectant, and gives much support to the theory that a peculiar state of the atmosphere is the main if not the sole cause of epidemic diseases. The popular belief, however, that plague always ceases in June is local, and may apply only to certain latitudes and to modern times. The ancient Arabian physicians mention the latter part of summer and autumn as the time of the year in which pestilential fever is mostly prevalent.

A word remains to be said on the *treatment* of this terrible disease. If it be true that plague is a peculiar epidemic of very

malignant typhus,—and all that we know of it would lead to this conclusion,—the main principles of treatment will be the same in both diseases. Free ventilation and pure air, great cleanliness of the body and linen of the patient, supporting the strength by proper alimentation and stimulants, and treating the graver symptoms as they arise or predominate, with good nursing, seem to be the proper measures for combating the plague-fever. In all bad cases of fever I have found quinine for the reduction of temperature, and hydrate of chloral for procuring sleep, to be of the utmost value, and I believe they deserve a fair trial in plague. The mineral acids and the so-called anti-zymotic remedies which have been lately tried may also be found highly useful.

The older Arabian writers recommended bleeding, emetics or cathartics, according to the special indications of each case in the early stage of the disease; and later on maintaining the strength by compulsory food, and allowing the patient large quantities of cold water, often acidulated. They do not appear to have used much medicine, but insisted most strongly on purity of air, and upholding the strength by every measure they knew. They treated the buboes by early opening, and dressed them and the carbuncles with antiseptic agents.

A *résumé* of the preceding pages may be formulated in the following propositions:—

1. Plague is a pestilential fever closely allied to, if not identical with, the most malignant forms of typhus fever, its chief symptoms being a febrile state, accompanied by great prostration; pain in the limbs, vomiting of vitiated bile or blood, much distress; delirium, insomnia and coma; often bubonic swellings of the lymphatic glands, and carbuncles, both of which are considered pathognomonic of the disease; and a dark-coloured rash portending death.

2. It rages as an epidemic, is extremely fatal, and has been considered both in ancient and modern times one of the severest scourges which afflict the human race. Judging from the epidemics of 1873, 1874, 1876, and 1877 in Bagdad and its vicinity, it would appear that the mortality was about 50 in 1000, or 5 per cent. of the inhabitants exposed to its ravages.

3. Plague breaks out spontaneously in limited geographical places—Northern Africa, Egypt, Syria, Turkey, and Persia. Its last outbreaks were in Egypt, 1842; Bengazi, a town of Barbary, 1858 and 1874; Hindié, 1867; Persian Kurdistan, 1872; Hillah and Bagdad, 1876, 1877. It is said to exist now (1878) in Resht, Persia.

4. Plague is one of those zymotic diseases whose origin is still unknown, though recent observers incline to the theory that they are produced by *disease-germs* or minute organisms generated under certain conditions, and which enter the blood and give rise to a succession of well-defined morbid phenomena. The ancients,

while not ignoring the noxious influence of unhealthy exhalations from the soil, lay much weight on unknown changes in the atmosphere produced by meteorological causes. This view of the case is entitled to the serious consideration of students of meteorology in its relations to health and disease.

5. It is highly contagious, and its quality of communicability from contaminated bodies and clothes to persons in sound health, and of travelling by means of caravans and ships from infected to healthy spots, is beyond doubt. Its contagiousness is so great that it seems as if it attacked only persons who are exposed to direct infection. Thus, persons who "shut themselves up" in the midst of the raging pestilence enjoy a remarkable degree of immunity from taking the disease.

6. As in other epidemic diseases, low, damp, ill-ventilated habitations, poverty, filth, and misery are the most favourable conditions for the propagation and ravages of plague.

7. Unlike most of the zymotic diseases,—such as syphilis, typhus fever, and smallpox,—the plague-poison does not appear to possess "the extraordinary property of exhausting the constitution of all susceptibility to a second action of the same poison." Like cholera it may attack the same person again.

8. While the utility and even possibility of quarantines may be questionable in Europe, where the measures of public hygiene are attended to, and commercial intercommunication is very great, it would be a hazardous experiment to give them up in the East, where their value has been repeatedly attested.

ARTICLE III.—*Two Cases of Cerebral Abscesses.* By P. MITCHELL PENMAN, M.B., The Asylum, Larbert.

THE two following cases of cerebral abscess are of interest, inasmuch as they show two entirely different terminations to this lesion, one ending fatally, and the other in recovery, as far as recovery is possible in such a case. Another point of interest which the first case presents, is, that all the convolutions of the left frontal lobe, except the inferior, were affected, and there was no aphasia. It would have also been of value, if in the second case the relation of the epilepsy to the lesion found after death could have been shown, but the want of any details of her former history prevents this.

R. S., aged 59. a labourer, admitted to Stirling District Asylum 6th November 1878. This was his first attack of insanity, and it had lasted for nine months prior to admission. No cause could be assigned for it, nor, as far as could be ascertained, was there any hereditary taint. He was stated to have been a hard-working, sober-living man.

The symptoms of mental disease which he presented on admis-

sion were those of melancholia, accompanied with excitement. He was in a state of considerable depression, and was continually walking to and fro in the day-room, groaning and crying out about his lost estate. This condition, which was always worse towards evening, necessitated his being put into a single room at night. To procure sleep, which he would otherwise have lost, he was given almost nightly a draught composed of chloral hydrate and bromide of potassium. In a few weeks, under the influence of good diet and sleep, he had improved so much that his attention, which before had been entirely engrossed with his own imagined troubles, could be turned to the performing of some simple duties about the day-room. The improvement which he made during the first two or three months of his stay in the Asylum was considerable, but his despondency never entirely left him, and he ultimately got into a chronic condition of grumbling and whining at his sad lot. He remained in this low-spirited condition until the beginning of March of the present year, when he had an acute exacerbation, during which he made an attempt to escape by breaking a pane of glass in the window of the dormitory in which he slept. In falling to the ground he sustained a fracture of the right internal malleolus. During the time he was confined to bed by this accident he was in a state of most acute mental suffering. He had hallucinations of both sight and hearing, and he was possessed by the idea that those forms which he saw in his room were there for the purpose of taking his life, and after that to carry his soul into perdition. He seemed to gain comfort when any one visited him, and he would cling to them tenaciously, and beg in a most pitiful way that they would remain beside him, at the same time pouring forth a perfect torrent of exclamations, such as "Oh! we shall all be lost!" "Oh! this is dreadful!" etc., etc. In fact, the condition of intense mental pain was most marked. Often he would be found out of bed, and lying in the furthest corner of the room trying to hide, as he said, from those who were seeking his life.

His answers to questions were quite coherent, but his mind was so filled with his delusions that conversation on any other subject could not be raised. Natural sleep was entirely absent, and it was only by large doses of chloral hydrate and bromide of potassium that a few hours could be obtained for him. His temperature was increased, and he rapidly emaciated, although his appetite continued fair.

In about a fortnight, with the hope that mixing with his fellow-patients would help to quieten him, he was allowed to sit in the day-room, but it was not of any avail, and he required an attendant constantly watching to prevent him crawling into all sorts of out-of-the-way corners. One day while sitting in the day-room he suddenly fell from his chair to the floor, and lay quite unconscious. He was carried to bed, and when visited immediately afterwards he was breathing stertorously, was semi-conscious, but speechless,

and there was partial loss of power of the *right* arm and leg. He gradually sank, and died on the third day.

Post-mortem made thirty-six hours after death. Body extremely emaciated.

Head.—Skull-cap thin and dense, the diploë being almost absent. On removing the dura mater a large blood-clot was observed to be spread over the whole surface of the left hemisphere of the brain. On carefully washing away this clot the cause of the hæmorrhage was found to have been an erosion of one of the veins ramifying in the pia mater. This was discovered by means of a small clot projecting from the opening. The exact spot where this vein had given way was over the middle convolution of the frontal lobe, just about its junction with the ascending convolution of the same lobe. Underneath the pia mater in this region was another clot, extending over a surface of the size of a five-shilling piece. The convolutions of the left hemisphere were much flatter and broader than those of the right.

On making a section of the brain, an irregularly-shaped cavity filled with blood-clot, and a thick, creamy-looking fluid, of the nature of pus, was seen to occupy nearly the whole of the interior of the left frontal lobe. This cavity was large enough to have held a good-sized hen's egg. Its walls were ragged, and were not lined by any membrane. It extended downwards to within an inch and a half of the orbital surface of the lobe, forwards to within half an inch of the anterior surface, but superiorly over the situation of the middle convolution it was covered only by pia mater, and it was here that the vein had given way. About half an inch of the first part of the middle convolution had been entirely destroyed in the formation of this cavity, and portions of the superior and ascending convolutions were also injured. The inferior frontal convolution was in no way affected. There was no communication between the left lateral ventricle and the abscess cavity. The brain substance in the neighbourhood was softer than usual, and the puncta cruenta were well marked.

The rest of the brain was normal, and nothing of any consequence was found in the other organs of the body.

C. J., aged 23, a millworker, admitted to the Asylum 4th April 1876.

Unfortunately no details of her history could be obtained. She was brought from a workhouse, and is certified as being a confirmed epileptic, dirty in her habits, and violent.

Towards the close of her life she lapsed into a condition of utter dementia, with occasional outbreaks of extreme violence, along with which she at times displayed exalted religious excitement. Her memory was completely gone, not even the names of the attendants or the other patients being remembered by her. She addressed every one by the name of "Annie." The fits recurred

with great frequency, scarcely a day passing without her having one or more, and some days she would have as many as six or seven in the twenty-four hours. Her speech was always incoherent, and when the fits had been more than usually frequent, she was very confused, and would often break off in the middle of a sentence as if she had forgotten what she was talking about.

She was found dead in bed, having been suffocated while in an epileptic fit.

Post-mortem made thirty-six hours after death. Body very well nourished. Face swollen and livid.

Head.—There was no adhesion of the dura mater to the skull-cap. The hemispheres of the brain at the frontal lobes were firmly bound together by strong adhesions, which required to be divided with the knife before the two parts could be separated. The pia mater in this situation on the right side was thickened, and underneath it there was a considerable depression on the upper surface of the frontal lobe. The parts of the superior and ascending frontal convolutions forming this depression were broken up into a number of small narrow transverse bars, which gave the surface a puckered appearance.

On making a section of the brain, there was found in the centre of the right frontal lobe a chalky-looking mass, surrounded by a capsule. The knife had cut off the upper portion of this mass, which lay immediately beneath the depression on the upper surface of the frontal lobe. Its exact position was, beginning from above, in the substance of the superior and ascending frontal convolutions; it passed forwards, outwards, and downwards beneath the middle convolution, and reached to the inferior convolution, which, however, it in no way affected. It measured an inch and a quarter in length, and half an inch in breadth, and had a slight constriction in the middle. The capsule was tough and membranous, and was quite free from any attachment to the surrounding brain substance, except on its under surface, where it was loosely attached to the white matter below. The contents of the capsule consisted of small stony lumps, some almost as large as peas, and a white cheesy substance with gritty particles scattered through it. The calcareous nature of the mass was shown by it producing effervescence when added to an acid. The general substance of the brain was hard and firm, having almost a fibrous feeling. The other organs of the body presented nothing abnormal, except the usual appearances found in persons dying from asphyxia.

ARTICLE IV.—*Remarks on the Examination and Classification of Cases of Colour-Blindness.* By GEORGE A. BERRY, M.B.

SINCE the publication of Holmgren's excellent work on colour-blindness,¹ a great deal of attention has been paid, not only in Sweden, but also in most European countries and America, to this curious physiological anomaly. The comparative frequency of defects of colour-vision has directed attention to the possible dangers which might result from the employment in our railways and mercantile fleet of individuals unable to distinguish with normal certainty between the colours universally used as signals, viz., red and green.

Although we cannot but think that accidents directly traceable to mistakes arising from colour-blindness must be of extremely rare occurrence, and that the possible dangers have been considerably exaggerated, still we have little doubt that our Government will sooner or later follow the example of others, and demand a systematic examination of the colour-vision of all persons entering such services. This examination will no doubt, to some extent at least, have to be conducted by medical men, and it is on this account that we feel justified in publishing our views as to the nature of colour-blindness in a journal devoted more especially to papers on practical medicine and surgery, rather than in one of the physiological journals, for which they might otherwise be more suitable.

After having recognised the possible dangers above referred to in connexion with colour-blindness, it naturally became of the utmost importance to discover a means whereby any trace of this anomaly could be speedily detected. Holmgren has undoubtedly the merit of being the first to devise and employ a method which has shown itself to be thoroughly practical and expeditious. For the benefit of those of our readers who may not yet be acquainted with this method, it may be as well, in as few words as possible, to describe it. It is a well-known fact that a high degree of achromatopsia may co-exist with a tolerably perfect power of naming colours, from which it is evident that any system based on the statements made by individuals as to the names of colours presented to them must be rejected as impracticable. Holmgren has therefore adopted the method of *comparison* between colours which to the normal eye are different, a method which, in a less perfect manner, inasmuch as the time required for examination is much longer, was used by Maxwell² and Seebeck.³ Holmgren's method is, in fact, a modification of Seebeck's: the individual examined is

¹ *Om Färgblindheten i dess förhållande till Jernvägstrafiken och Sjöväsendet.* Upsala, 1877.

² *Trans. Roy. Soc. Edin.*, 1855.

³ "Mangel an Farbensinn," *Pogg. Ann.*, 1837.

asked to pick out from amongst a large number of differently coloured wools those which appear most like one particular shade placed before him. The reasons for choosing wool instead of coloured glass, paper pigments, etc., are, that all colours and shades of wool are easily obtained in any shop ;¹ that it can be used without any preparation as obtained ; that, having the same colour on all sides, it is easily recognised amongst a lot of other coloured objects ; that as its surface is rough, no difficulty is caused by reflexion ; and finally, that it is easily packed and carried about.

From the way in which this test is executed by different individuals it can at once be seen whether they are colour-blind or not: those with normal vision, provided they are possessed of a certain amount of intelligence, are not long in selecting the few shades which most nearly resemble the pattern given them to match ; and a colour-blind individual soon commits a sufficient number of mistakes to amply reveal his defect. In order, however, at once to obtain some idea as to the nature of his colour-blindness, it is advisable to choose certain colours as patterns. Holmgren begins with light green, and, when mistakes are made with this, proceeds with some shade of rose or purple, which, owing to its position in the scale of colour perceptions,—viz., between red and blue,—is very well suited for this purpose, as it can at once be seen from the colours with which it is confounded, or, in other words, with which it is pseudo-isochromatic, in which direction the defect lies. Several subsequent investigators, more particularly Cohn² (who has lately examined a great number of cases of colour-blindness from the various schools in Breslau, and whose work on this subject is one of the most valuable of the more recent publications, inasmuch as he has, with the utmost impartiality, employed most of the methods of examination, and fully recorded the result in each case), have rejected as superfluous the preliminary examination with light green, and begun at once with rose. This, we think, is a mistake, as although rose probably suffices as a test for all forms of colour-blindness when complete, yet slight anomalies of colour-vision are most easily detected by using light green. Holmgren gives, as the result of examination by his method, the following classification of all cases of defects of colour-vision :—

I. *Total Colour-blindness*.—In these cases colour hues are not distinguished from each other as such, but only according to their relative brightness (very much in the same way as the normal eye would distinguish coloured objects illumined by a sodium flame alone).

II. *Partial Colour-blindness*.—This may be (a) complete or (b) incomplete.

¹ We procured ours, exactly as used by Holmgren, from Betty Oldberg, Upsala, for 5 kr. (5s. 8d.)

² *Studien ueber angeboren Farbenblindheit*. Breslau, 1879.

Complete partial colour-blindness he divides into (α) red-blindness, (β) green-blindness, and (γ) violet-blindness. Although most writers are agreed as to the great superiority of the above described method for the rapid determination of colour-blindness, there is a most extraordinary, and at first sight apparently inexplicable, want of unanimity with regard to the classification of cases of complete partial colour-blindness; some, amongst whom are Hering,¹ Cohn,² Stilling,³ etc., contending that there is no difference between red and green blindness, and between blue and yellow blindness, whilst others—Donders,⁴ Raehlmann,⁵ Magnus,⁶ etc.,—follow Holmgren's classification, which is based on the Young-Helmholtz theory of colour perception. Those, again, who adopt the first classification see in the phenomena of colour-blindness a strong support for Hering's theory. We shall endeavour to explain how it is that the same phenomena appear to support both theories; but first let us consider the theories themselves. The theory of Thomas Young,⁷ which, revived and extended by Helmholtz, is now generally known as the Young-Helmholtz theory, was until recently, and since the publication of Helmholtz's great work on physiological optics,⁸ the one generally adopted to explain the nature of our colour perception. It supposes that there exist in the eye three different kinds of nerve-fibres, which, when thrown independently into a state of functional activity, give rise respectively to the sensations red, green, and violet, which have received the name of the three fundamental colour sensations, so that light of different wave lengths, although acting as an excitant to all three, produces unlike effects on each, according to the length of the undulations. Thus the red-perceiving elements are most strongly excited by the longest light waves, and the violet by the shortest, whilst undulations of medium length produce the greatest effect on the green elements. The sensation of *red* is therefore, according to this theory, produced by a strong excitation of the red-perceiving elements, together with a weak excitation of the green and violet. *Yellow*, again, must be imagined as produced by a moderate excitation of the red and green, and a weak excitation of the violet elements; *green*, by a strong excitation of the green, and a weak excitation of the two others; and *blue*, by a moderately powerful excitation of the green and violet elements,

¹ *Sitzungsbericht der Wien-Akad.*, vol. lxix.

² *Loc. cit.*

³ "Beiträge zur Lehre v. den Farbenempfindungen" (*Zehender*, 1875-76, extra vol.)

⁴ "Des systèmes dichromatiques" (*Annales d'oculistique*, 1879, p. 7).

⁵ "Beiträge z. Lehre v. Daltonismus u. seiner Bedeutung f. die Young'sche Farbentheorie" (*Graefe's Archiv*, vol. xix.)

⁶ "Beiträge z. Kenntniss der Physiologischen Farbenblindheit" (*Graefe's Archiv*, vol. xxiv.)

⁷ *Lectures on Natural Philosophy*. London, 1807.

⁸ *Handbuch der Physiologischen Optik*. Leipzig, 1867.

and a weak excitation of the red. This is represented diagrammatically in the accompanying figure taken from Helmholtz, where the colours of the spectrum are supposed arranged in order horizontally, whilst the three superimposed curves are taken to represent, more or less exactly, the irritability of the three kinds of fibres for each part of the spectrum.

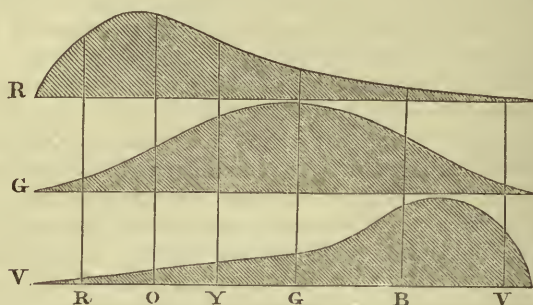


FIG. 1. (After Helmholtz.)

As we shall elsewhere consider in detail the arguments for and against the Young-Helmholtz theory, we have at present merely to state that, although its supporters imagine that they see in colour-blindness the strongest arguments in its favour, we doubt whether it or any other theory based on the assumption of a limited number of principal or fundamental colour perceptions is borne out by the phenomena which that condition presents.

We are now in a position to understand Holmgren's classification. Red-blindness is, according to the theory of Young and Helmholtz, the result of an absence or paralysis of the red-perceiving elements: a red-blind individual's colour perceptions must, therefore, be made up of a combination of two instead of three fundamental sensations—green and violet. In green-blindness, again, a different fundamental colour perception is wanting, and the remaining colours arise from combinations of red and violet alone; finally, violet-blindness will be due to a loss of the fundamental colour sensation which remained in the two preceding cases, and all colours will be made up of a simultaneous perception of red and green in different proportions.

Let us see if we can now imagine in what colours the spectrum must appear to any one supposed to have but two of the three fundamental sensations of colour. We shall then be able to see how this supposition can explain the actual mistakes in colour comparison made by the colour-blind. Let us take *green-blindness*; here absence of the green-perceiving elements will give rise, according to Holmgren, to the following:—"Spectral red, which excites strongly the red-perceiving organs, but scarcely at all the violet, must appear as a red somewhat weaker but much more saturated than normal red, which is relatively more yellowish

owing to mixture with green. Yellow is certainly a stronger but at the same time a more whitish red than spectral red, as a considerable amount of the other primary colour perception is excited. Green, with its hues in the direction of yellow and blue, should be a saturated and tolerably strong purple, but is, at the same time, the green-blind individual's white (gray), as the two primary colours enter in tolerably equal proportions. Blue is a strong but somewhat less saturated blue than indigo, which is also stronger; and violet a somewhat weaker but more saturated violet than the normal.

"In this case, then, the same elements are excited by both red and green spectral light. Red and green produce, therefore, the same sensation for a green-blind individual. In those cases in which he can distinguish between them, he does so owing to the difference in their brightness (shade). In this case, though, as far as brightness goes, the conditions are exactly the opposite from those seen in red-blindness, a green *nuance* which is to appear to the green-blind exactly like a red, must be such as to the normal eye appear decidedly lighter than the red."

Following the same theory, red and green must also appear of the same colour to the red-blind; green objects, however, which give rise to the same impressions as red, must be such as to the normal eye appear darker and weaker.

The whole difference between the conditions which are thus distinguished as red and green blindness is that in the first case red appears isochromatic with dark green, in the second with light green.

Such a difference is actually found to exist in testing by Holmgren's method. Thus one set of colour-blind individuals will place along with a bright red wool darkish shades of green and brown, and along with the purple or rose-colour test which Holmgren recommends, some shade of blue; whilst others compare the red pattern with lighter shades of green and with yellowish-brown, and the rose-coloured one with green or gray. There is, therefore, an undoubted difference between these two cases, although, as will afterwards be seen, we shall have occasion to question the correctness of the distinction into red and green blindness.

Holmgren has lately devised¹ what seems to be a very good way of distinguishing between his cases of red and green blindness. It is based on the principle of *simultaneous contrast*. When a colourless surface is simultaneously illuminated by a coloured and a white light, the two shadows thrown by an object lying between the sources of light and the surface appear, the one in the colour of the coloured light, the other in its complementary colour. Now, suppose a red and a white light be used for casting the two shadows from the same object, that cast by the white light will be illumined by the red light alone, and will appear red, and that cast by the red and illumined by the white alone will appear

¹ "Om de färgade Skuggorna och färgblindheten" (*Upsala Läkareförenings Förhandl.*, vol. xiii. p. 456).

green. Red or green blind individuals, not receiving the normal impression from the one coloured shadow, do not see the other shadow in its true complement, and distinguish the shadows more from their relative darkness than from their difference in hue. For the purpose of being able to vary the strength of these shadows to a measurable extent, Holmgren has constructed his *chromatoskiameter*, which he thus shortly describes in an abstract of his own paper:¹—"It consists of a stand specially adapted, bearing in the centre an ordinary petroleum lamp; two wooden arms, about a metre in length, proceed from its centre, movable in a horizontal plane round it: these support the other parts of the apparatus. On the one arm the coloured glass, the shadow-throwing body, and the screen are given a fixed position at a definite distance from the lamp, whilst a mirror reflecting the light of the lamp on the screen is movable back and forward on the other arm, on which the position given to it in any experiment can be read off in a millimetre scale."

Two differently coloured glasses were used for these investigations—a *red*, which only transmitted red spectral light, and a *green*, which, besides transmitting all the green light of the spectrum, also permitted of the passage to a small extent of other rays, but entirely excluded red.

The *chromatoskiameter* has first to be graduated for normal colour-vision—that is to say, the distance found for each glass at which both shadows appear of equal strength, each in its own colour. Holmgren found for himself:—

For the red glass, = 40 cm.

„ green „ = 35 cm.

Difference (R.-Gr.), = 5 cm.

He says that it is, as a rule, much easier for the colour-blind to find such a position for the mirror, for this reason, that they generally find the shadows identical in colour when the mirror has attained the position at which they appear of equal strength. This placing of the mirror in the required position is so characteristic that it reveals the nature of the colour-vision. It varies much in different cases, but all the cases examined "could, from the method of executing this test, be arranged in two well-defined groups, which correspond to two kinds of complete colour-blindness, red and green blindness."

The distance of the mirror averaged, for 25 cases of red-blindness:—

For the red glass, = 73.2 cm.

„ green „ = 27.6 cm.

Difference (R.-Gr.), = 45.6 cm.

¹ *Nordiskt Medicinskt Arkiv*, vol. xi. No. 6.

And for 35 cases of green-blindness:—

For the red glass, = 28·7 cm.

„ green „ = 48·5 cm.

Difference (Gr.-R.), = 19·8 cm.

This method, although a capital one for the control of cases examined by the coloured wools, is admitted by Holmgren himself to be much inferior to the wool method for the primary detection of anomalies of colour-vision.

Let us now turn our attention to the other classification of colour-blindness into red-green-blindness and blue-yellow-blindness. A considerable number, and, as it appears to us, a constantly increasing number of ophthalmologists are inclined to adopt Hering's theory, and classify as above. According to Hering, "all our colour sensations must be ascribed to four fundamental or primary sensations—red, green, blue, and yellow," and "the sensations red and green on the one hand, and blue and yellow on the other, are antagonistic and neutralizing." There is no such thing as reddish-green, greenish-red, bluish-yellow, or yellowish-blue. Further, he assumes the existence of two more fundamental sensations of a different order—black and white; the latter being the consciousness of material changes in the central visual apparatus produced by objective light, the former the consciousness of nature's reparation. The one he calls dissimilation (D), the other assimilation (A). When $D = A$ we have the sensation of a medium gray. This black-white series of sensations is at the same time called into action by all light rays. We are consequently unable to perceive any colour absolutely pure.

The two colour-pairs, red-green and blue-yellow, are supposed to stand in the same relation of dissimilation and assimilation to each other. Thus, if by the dissimilation of some substance we perceive red, assimilation of the same substance gives rise to the sensation of green. In this way is explained the appearance of after-images in the complementary colour. But if red be produced objectively by dissimilation, it appears to us very unreasonable to suppose, as this theory would have us do, that the objective sensation of green arises from assimilation—assimilation produced directly by rays of light! It would coincide better with our views on physiology in general were we to assume that dissimilation in the green-perceiving elements produced the same effect on our sensorium as assimilation in the red, and *vice versâ*. Objective sensations, whether white or coloured, would then all arise from dissimilation, whilst all subjective colour sensations would owe their origin to assimilation.¹

¹ That a similar explanation may be conceived without the assumption of fundamental sensations will be seen by reference to p. 319, where will also be found a diagrammatic representation of the theories of four fundamental colour sensations.

We are now in a position to understand why those who embrace this theory do not believe in the separate existence of red and green blindness. Green and red objects are mistaken *inter se* because they are both uncoloured, as, when we are unable to see red as such, we must also be blind for green. The supporters of Young's theory, on the other hand, imagine that the confusion is made by a green-blind individual because he sees green objects red as well as those which, to the normal eye, appear red, and by a red-blind individual because he sees both green and red objects green.

Now, it is more difficult than it would *a priori* be imagined to tell how a colour-blind individual actually sees a certain colour, because, having been influenced all his life by the names given to the colours of surrounding objects by his more fortunate companions, he may have so associated definite shades of gray, seen in certain relations, with certain colours, that when a gray object having that particular *nuance* is placed before him, he does not hesitate to call it by the name of the colour for which he is blind, and which gives him the same impression. Thus it is that of two colour-blind individuals whose defects appear otherwise to be similar, one will be found to call a certain shade of gray green or red, whereas the other defines it rightly. But—and this is a point of great importance—he does not make the mistake with all shades of gray; he does not, for instance, call all light grays light red or light green, and all dark grays dark red or dark green.

We have now to consider what is the actual condition of the sense of colour in those who are colour-blind; and if in the phenomena of colour-blindness itself there is nothing which might form a basis for classification, independent of any theory we may embrace as to the perception of colour. In the first place, we think there can be no doubt that an individual who is blind for one particular colour hue is at the same time blind for its complement. That this is the case is shown by the following facts:—It is possible, as is well known, by rapid rotation on a Maxwell's disc, to obtain from three or more suitable coloured sectors an impression which is identical with that of a mixture of white and black produced in the same way: the colours, taken in certain proportions, can be got to neutralize each other, so that the resulting impression is colourless. The slightest change, however, made in the proportion of each colour, or the removal of any portion of one of the colours entering into the combination, can at once be detected, and some colour sensation is the result. If, on the other hand, the disc should contain two sectors of exactly complementary colours, their simultaneous removal would not destroy the colourless effect; the remaining colours would continue to neutralize each other, so that the impressions they give rise to, following each other in rapid succession, would resolve themselves into gray. Now, it is found that the same mixture which to a normal individual appears similar to a mixture of black and white, appears also to the colour-

blind identical with the same gray thus produced; whence it follows, as they are known to be blind for one colour, that they must either be insensitive to two complementary hues in both discs, or to only one in each. If they only fail to perceive one, both discs must appear to them coloured; but this is unlikely, because then all objects which appear to the normal eye colourless must appear to them coloured, which there is no reason to suppose is the case. But there is another reason for believing that this cannot be the case, viz., the analogy which exists between physiological colour-blindness on the one hand, and the normal colour-sense at the periphery of the retina and pathological colour-blindness on the other. Although we believe, for reasons which need not here be stated, that the colour-blindness existing for the peripheral parts of the field of vision is only partial, still the fact remains that there a very similar colour confusion exists as in the colour-blind. Thus a red or green object will appear, when viewed peripherically, yellow, gray, or blue, according to the hue taken; yet a white or gray object does not become coloured by being moved from the centre to the periphery of the field of vision, which, as a white surface reflects all rays equally, or at any rate nothing but rays which neutralize each other, would necessarily be the case if certain parts of our retina were insensitive only to particular and non-complementary homogeneous rays.

Again, if a certain colour appear colourless to a colour-blind individual, its after-image appears also colourless, and one which fails to produce the normal impression also gives rise to an after-image which is exactly complementary to the impression received, and not to that which would be seen by any one whose colour-sense was not defective. There is no reason, however, why rays which, although colourless, are yet visible, should fail to produce in us the usual successive or simultaneous contrast, unless we are at the same time insensitive to those which give rise to the complementary impression; indeed, if we have not the power of evoking the normal impression subjectively, we cannot expect to do so objectively.

Another point of importance in connexion with the vision of the colour-blind is, that although they fail to distinguish between many different colours, yet they are only actually blind for two particular hues which are complementary, and the slightest change in which is capable of giving rise to a colour impression. Thus most see a continuous spectrum, or one in which the two hues of which it is composed are only separated by a narrow band of gray, which band diminishes in breadth according as the intensity of the illumination increases. These *neutral* points appear, however, to differ in different cases of colour-blindness, which, nevertheless, are included under the same class. If, therefore, we could imagine all our possible colour hue perceptions so disposed round the periphery of a circle that those which are complementary were exactly

opposite each other, we should find that the directions of the diameter representing the exact hues for which different individuals were blind differ. Such a circle would necessarily include not only all the different homogeneous light rays which we are capable of distinguishing as different hues,—in other words, all the colours of the spectrum,—but also such complements to these colours as are not contained in the spectrum, which for some reason or other we are not able to see as homogeneous light, although we can do so subjectively, or by mixing other spectral colours. We refer to all the different hues of purple. The reason why only one neutral line is to be found in the colour-blind spectrum is, that in the immense majority of cases the diameter representing the hues for which they are insensitive passes from some part of the green to some part of the purple. The position of this colour-blind diameter *has an influence on the perception of all the colours of the spectrum*, and constitutes a difference—at one time small, at another time considerable—between two cases of colour-blindness, so that if in one case the diameter lie between bright green and purple, the colour confusion will differ from that presented by a case where it lies between a more bluish green and a more reddish purple or rose colour. This, we believe, is the true explanation of the difference between green and red blindness of some others. What we usually call green is not exactly complementary to red, but to purple. Although many observers have noticed this difference in the exact hue for which individual cases are blind, they have either ascribed no importance to it or given some other explanation; as, for instance, this one of Stilling's:¹—“Let us suppose a certain rose-colour to be made up of three parts of red and two of blue. To a colour-blind eye with normal acuteness of vision (V) for red, this red appears yellow, and the rose for such an eye must be made up of three parts of yellow and two of blue, and must therefore be seen as a yellowish gray. A second red-green blind eye may have V for red diminished to such an extent that the yellow impression to which the red gives rise is exactly sufficient to neutralize the blue. To such an eye the rose-colour must appear gray. For a third red-green blind eye there is, let us say, a considerable shortening of the left end of the spectrum: it scarcely, if at all, sees the red, so that in any case the blue impression predominates. For such an eye the rose-colour is blue. In this way it is easily explained how different hues are confounded with gray.” Now, in the first place, Stilling, along with so many others, talks of red, yellow, green, and blue as if there were only one red, one yellow, etc. (whereas it is impossible for us to point out four exact spots in the spectrum which appear to us more red or more yellow, more green or more blue, than the parts immediately contiguous). Thus he has in another paper,² in describing a method of arriving

¹ “Ueber den Stand der Farbenfrage” (*Archiv. f. Angenh.*, vol. viii.)

² *Loc. cit. ant.*

at the exact colourless hue in his testing of colour-blindness by means of coloured shadow contrasts, come to the conclusion that, although he is unable with a prism to detect any yellow rays in the light passing through a certain combination of blue and red glasses, yet, as it appears yellow in some cases of colour-blindness, it must nevertheless contain yellow rays; and therefore, although it appears to the normal eye purple, it must contain, besides blue and red, also yellow rays, which for the colour-blind eye (although not for the normal!) are sufficient to neutralize the blue, leaving the red, for which he is blind. He says—"Even if objective red light had the property of exciting simultaneously both the red and yellow perceiving elements of our eye, yet this does not explain why a candle flame appearing to the normal eye of a deep reddish purple should appear to the colour blind eye colourless through three blue glasses and one red, and yellow through two blue and one red. The addition of blue glasses can plainly have no other effect than that of absorbing the yellow rays passing through the red glass; consequently even the deepest spectral red must still be mixed with objective yellow." Again, Stilling considers shortening of the left end of the spectrum as affording an explanation for the different hues perceived as gray in different cases. This actual blindness for the less refrangible rays of the spectrum we should feel more inclined to look upon as something similar to the normal blindness for homogeneous purple rays, to which we have already referred, in which case it is improbable that it can have anything to do with what we call colour-blindness, which, as we have seen, principally exhibits itself in a want of power of distinguishing between different colours. It is found in about 2 per cent. of colour-blind individuals. We should like, therefore, to know the result of the examination of the spectra of a number of individuals possessing the normal power of distinguishing between different colours before ascribing to it even a secondary importance in the phenomena of colour-blindness.

Stilling's second case, which takes into consideration diminished V existing in some cases for red rays, would, we must admit, offer a very satisfactory explanation if he could have shown that the exact neutral hue varied only when there existed, and in proportion to, a diminution of V for such rays. Supposing we were to take a blue and yellow hue which were exactly complementary, it is quite evident that, by mixing them in any proportion we pleased, we should not be able to destroy the sensation of colour to which the combination would give rise, unless we happened just to hit upon the exact proportions in which the relative intensities and proportionate quantities were in equilibrium. If, therefore, the red component of a blue and red mixture gave rise in one case to only a feeble sensation of yellow, whereas in another the sensation was much more intense, it is quite clear that in the first case the amount of blue required to be added to the red in order to produce

a neutral sensation would be less than in the second case; or, in other words, the purple of the first case would be more reddish than that of the second. Yet the mere probability of the red colour taken appearing in one case more strongly of some particular yellow hue than in another, lies for us in the different positions which the neutral diameter in one colour-perception circle has in different cases, which, as we before remarked, alters the perception of all other colours; but a diminution in the distance at which certain colour hues can be distinguished is said by Donders¹ to be commoner than supposed, although absolute colour-blindness is rare. He says—"On approaching a small coloured object the normal eye distinguishes its colour, but very shortly after perceiving it at all; one does not require to search long in order to find people who begin to see the colour of the object much later than the light it reflects."

Adamük and Woinow² have found that the colour mixtures which appear gray at certain parts of the periphery of the retina vary according to the intensity of the illumination; and, according to Donders and Landolt,³ the peripheral colour impressions do not differ from the central if the intensity of illumination be increased. Such cases, then, for which Stilling's last explanation would apply are probably only those in which the colour-blindness is incomplete.

Donders determined numerically the acuteness of vision for colours of 2300 railway employés, from amongst whom he selected 152 for further examination. He determined V both for reflected and transmitted coloured light. For reflected light he used small portions of the signal-flags of different sizes, pressed into black velvet; and for transmitted light a candle placed at measurable distance behind the coloured glasses used for signaling, in front of which was a dark screen into which was let a piece of obscured glass, the size of which could be regulated by means of a diaphragm with holes of different sizes. The distinguishing power K he calculates by the following formula:—

$$K = \frac{1}{m^2} \cdot \frac{d^2}{D^2},$$

where 1 = 1 sq. mm.; m^2 = size of object (in square millimetres) for eye tested; D = distance at which normal eye sees 1 sq. mm.; and d = distance at which the tested eye discerns the colour.

As the perception of colour depends very much on the amount of illumination, D has to be determined for one's self at each examination. With transmitted light, where it is possible to

¹ "Die Quantitative Bestimmung des Farbenunterscheidungsvermögens" (*Arch. f. Ophth.*, xxiii. 4, p. 282).

² "Beiträge zur Lehre von den negativen Nachbildern" (*Arch. f. Ophth.*, xvii. 1, p. 135).

³ *Klinische Monatsblätter*, 1873, p. 356.

regulate the illumination by the distance of the candle behind the screen, the formula used was—

$$K = \frac{1}{m^2} \cdot \frac{d^2}{D^2} \cdot \frac{a^2}{A^2},$$

where A = the distance of candle when $D = 5$ metres. Although we have said that there are only two colour hues from which a colour-blind individual fails to receive any colour sensation, and therefore confounds with gray, we do not wish to be misunderstood, our statement having reference only to saturated colours, one of which forms the neutral line seen by some in the spectrum. The other, which in the great majority, if not in all cases, not being contained in the spectrum, cannot be evoked other than subjectively, as a mixture of two homogeneous rays, especially such corresponding to such widely apart colour perceptions as the violet and red of the spectrum, is far from being saturated. The colour-blind can, indeed, receive many impressions of gray corresponding in each case to different proportions of black and white, by mixtures with blue in different proportions of all colours from red to green. This is a natural consequence of their dichromatic spectrum and of the two colours seen being only saturated at two definite points.

Most investigators describe the spectrum of the colour-blind as continuous, although usually only containing two colours, no portion appearing gray. This is due, we believe, to the way in which they have conducted their examination. If a very luminous spectrum be used, and if we are right in supposing that the blindness is for one colour sensation alone, then it is not improbable, when we take into consideration our extraordinary power of distinguishing rays of different degrees of refraction as different colour hues,¹ that the images of the slit in the rays lying on each side of the one giving rise to the exact neutral hue might so overlap each other as to cover the image formed by these colourless rays. A less luminous spectrum, by so diminishing the colour sensations produced on each side of the neutral line, which in all cases are described as feeble, would give rise to the impression of a gray line separating the two colours composing the spectrum. Other cases, again, in which no neutral line is observed may be cases of incomplete colour-blindness, which, there is reason to believe, are not infrequent and of very different degrees.

All our possible colour hue perceptions form a continuous ring, as, although there is a break in those produced by homogeneous light between the extreme red and violet of the spectrum, still for every colour in the spectrum we have a complementary sensation, either contained in it or occupying a position between the two ends, exactly analogous to that which it would occupy did the spectrum itself complete the circle, and which we can evoke

¹ See Mandelstamm (*Arch. f. Ophth.*, xiii, 2, p. 399), and Dobrowolsky (*Ibid.*, vol. xviii, 1, p. 66).

subjectively or objectively by a mixture of heterogeneous light. If, therefore, adopting the supposition of Hering and others that all these various sensations are derived from four fundamental sensations, we wished to ascribe to these fundamental sensations definite positions in our colour circle, they would have to occupy diameters which in the first place corresponded to but two complementary sensations. By merely calling the one red and the others yellow, green, and blue, as so many writers do, we should, owing to the paucity of names for the many hundred distinct impressions produced by light of different wave lengths, apply names given to about three-tenths, one-fiftieth, one-tenth, and one-twelfth respectively of the whole spectrum to sensations which are supposed to be fundamental! As, according to this view of the nature of colour-blindness, that condition is due to the absence of two of the four fundamental sensations, the exact colours for which blindness exists must correspond to two of these fundamental sensations: let us represent them by

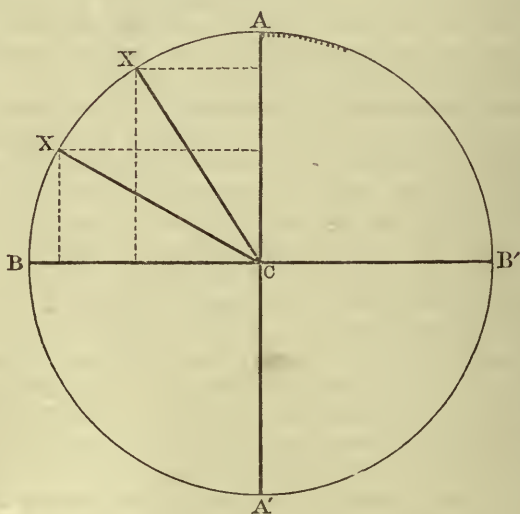


FIG 2.

the diameter AA' (Fig. 2). In the second place, as the colours remaining occupy a position midway between those which are wanting, our second diameter may be drawn at right angles to the first, BB' , in the figure.

Now let any other sensation, X , occupy a position between A and B . According to the theory this sensation, whether produced by homogeneous light or occupying the position it does in our series of colour perceptions as the resultant of any number of combined impressions, gives rise to a definite colour sensation owing to the proportion in which the simultaneous impressions of the funda-

mental sensations A and B enter, so that a colour sensation lying midway between the two would result from an equal impression on both, whilst those lying nearer B and those lying nearer A would arise from stronger impressions of B than A, or of A than B. If we call the angle A C X, α , and the angle B C X, β , the proportionate impressions of A and B giving rise to the compound sensation X will be as $\cos. \alpha$ to $\cos. \beta$.

We have introduced the above method of demonstrating diagrammatically the way in which four fundamental sensations may suffice for the perception of any number of hues, as it has a certain bearing on a suggestion lately thrown out by Krenchel. Krenchel seems to start from the idea that if it is possible to imagine any way (consistent, of course, with the state of our knowledge of normal and abnormal colour sensations) in which such could arise without calling in the aid of a limited number of fundamental colour sensations, hypotheses based upon the assumption of such must necessarily lose half their weight. Krenchel's paper contains, therefore, more a refutation of the existing theories than a new theory; and herein, we venture to say, lies its merit, as nothing has, to our mind, so trammelled researches in this branch of physiology as the blind adherence to such theories. According to Krenchel, we can imagine a molecule movable in all directions about its centre, and also capable of displacement in a vertical direction—such as a hemisphere floating in water. If we, at the same time, imagine that any displacement brings about a condition of unstable equilibrium, there would always be a tendency to regain the position of rest taking place in the opposite direction to the force causing the displacement. Let us imagine, again, that the number of appreciably different motions of this molecule corresponded to the total number of our colour sensations. If, then, A C (Fig. 3) represent the direction of the displacement corresponding to a certain colour, and the depression taking place at the same time at C represent the amount of white light we perceive along with the colour, then, on the close of the objective stimulus producing these displacements, there will be a return of the molecule to rest, the colour and shade of which will be complementary to A, and be represented in hue by the line A' C. The same holds good for any sensation represented by B C, Y C, etc.

The nearer the force causing displacement acts to the centre of the molecule, the greater will, of course, be the proportion of depression to rotation, and therefore the greater the admixture of the sensation of white light. Thus, if the sensation represented by A C arose from two simultaneous impressions of equal strength, the resulting impression would correspond to that produced by a force acting at the point *a*—i.e., would contain a greater proportion of white light. This is actually found to be the case, as the farther apart two spectral colours are taken, provided they are not so far distant as to be complementary, the whiter is the mixture, although always mid-

way between. As we cannot receive the sensation of purple from a homogeneous impression, the mixtures giving rise to the resultant molecular movement must, according to the figure, produce more whitish, less saturated purples than those which we can evoke subjectively by the after-images from saturated green hues. That this is actually the case will be evident to any one who makes the experiment.

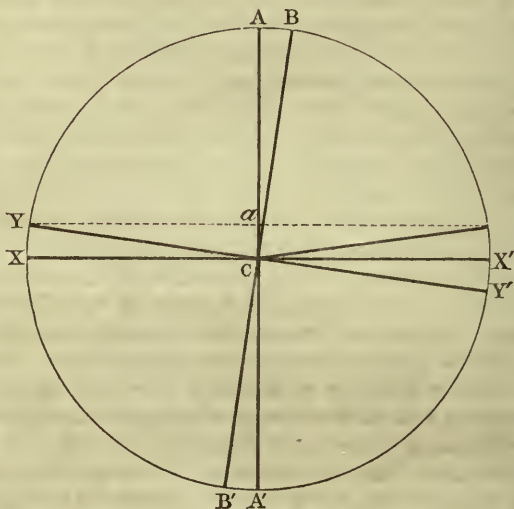


FIG. 3.

If, now, we imagine the rotatory molecular movement rendered impossible in any one direction represented by any of the diameters in the figure, our molecule can only retain this motion in one direction at right angles to the exact one for which it is abolished; but the movement up and down will not be affected. Now we have it in a condition which can explain all the phenomena of complete colour-blindness. In the first place, it explains why there are only two hues in the colour-blind spectrum lying midway between the neutral hues, and which, therefore, alter in position with the latter. It explains, also, how the colours passing from the position of the diameter representing the direction of possible movement to that at right angles gradually becomes less and less saturated, till they fail to produce any sensation of colour at all.

It must be remembered that this demonstration is only diagrammatic, and not put forth as a theory; but it appears to us that a point is gained when we can explain the same phenomena as well, if not better, without assuming the existence of primary sensations, about which we can know nothing. We could carry out the same train of thought still further, and show where and how such molecular motion could be imagined to be produced, but we should then

depart still further from the original intention of this paper, which was to point out how the different classifications of cases of colour-blindness arose, and how far the actual facts supported the theories which formed the bases of their classification.

We have now explained how it is that many different colour mixtures may be found which to the same colour-blind individual appear gray, and that this is a natural consequence of their dichromatic spectrum, and consistent with the belief that there exists blindness for but one pure colour hue. Cases of colour-blindness for yellow and blue hues have not been examined; as far as we know, for their neutral impressions; indeed, it appears extremely doubtful if such cases exist independently of the usual form of red and green blindness. The whole literature on the subject of colour-vision contains, so far as we are aware, only a few supposed cases examined by Stilling and Cohn, and those of the former, from the method of examination used, may be entirely disregarded.

If we take any red, orange, yellow, or green sector, and combine the impression received from it with that from a blue pigment, we shall find that the proportions of any of these with the blue, which is found necessary to produce a neutral colour sensation, varies in different cases of colour-blindness, that is to say, different cases are blind for different non-saturated hues—hues which owing to their mixture with white light are impure, and owing to the absorption of light by the pigments are wanting in brightness. It will be gathered from what has preceded that the explanation for this fact may be sought either in a difference in the acuteness of vision for one of the component colours, whilst the particular neutral hue remains the same, as Stilling suggests, or in the alteration of the strength of the impression arising from that component, owing to the altered position of the neutral diameter in the circle taken as diagrammatic of our pure colour sensations. We feel convinced that the proper solution of this point will be more conducive to the clearing up of the difficulties which still remain as to the nature of colour-blindness, than the efforts made by many investigators to explain all their observed facts by taking advantage of the natural elasticity of the theory of Young and Helmholtz.

To recapitulate.—There is no blindness for any colour hue without a simultaneous insensitiveness to its complement. In all probability there are a great number of forms of complete colour-blindness corresponding in general to blindness for certain rose and green hues; and although we prefer the classification into red-green-blindness and blue-yellow-blindness to that based on the theory of three fundamental sensations, still there can be little doubt that a more accurate one might be taken from the hues representing neutral sensations.

In conclusion, we would recommend the following systematic method of examination:—

1. Holmgren's wools for detection.

2. Position of neutral line in spectrum.

3. The examination with Maxwell's disc (using the same two pigments for every case, and taking care to select such as were unaffected by exposure to light).

4. Determination of V for colours.

We hope shortly to record the results obtained by the examination of a number of cases in the above manner.

ARTICLE V.—*Report of Cases Treated in connexion with the Edinburgh Royal Maternity and Simpson Memorial Hospital during the First Quarter; with Remarks.* By ALEXANDER KEILLER, M.D., F.R.C.P.E., Senior Acting Physician.

(Communicated to the Obstetrical Society of Edinburgh, 23d July 1879.)

Indoor Cases.—Total number of cases, 62: in May, 21; in June, 22; in July, 19. Of these there were—Multiparæ, 23; primiparæ, 39. There was one abortion at the third month, and one case of twins—the total number of children born being thus 62. The relative sexes of the children were—Male, 29; female, 33. There were in all 7 stillborn children—3 being putrid, and 2 premature.

There were 4 fatal cases as regards the mothers. The causes of death in these cases were as follows:—In 2 cases, puerperal peritonitis; in 1 case, septicæmia; and in 1 case, renal disease, the patient being almost moribund on admission, and premature labour having been induced.

The various labours may be classified as follows:—1 case of precipitate labour, 8 cases of laborious labour, 2 cases of complex labour, 1 case of abortion, 50 cases of normal labour.

The presentations were as follows:—In 1 case, left occipito-posterior; in 1 case, right occipito-anterior; in 2 cases, right occipito-posterior; in 3 cases, breech, all left sacro-anterior; in 1 case, twins—the first child presenting by the breech, left sacro-anterior, the second by the head, left occipito-anterior; in the remaining 53 cases, left occipito-anterior.

There were in 2 cases well-marked knots on the umbilical cord, in 7 cases battledore placentæ, and in 8 cases the cord was twisted round the child's neck.

There was 1 case of hæmorrhage in the third stage of labour. There were 4 cases in which the perineum gave way to the extent of $1\frac{1}{4}$ inches, and in each case the child was unusually large. There was 1 case of retained placenta, owing to hour-glass contraction of the uterus.

There were 2 cases in which, the child being apparently lifeless, artificial respiration and other means were successfully used.

There were 6 forceps cases, and 1 case in which premature labour

was induced. Lastly, there was 1 case in which pregnancy was complicated with a double ovarian cyst.

Average number of cases for last six quarters was about 53 per quarter; this quarter there were 62. Average ratio of forceps cases this quarter, 1 in 10; last six quarters, 1 in 16.

Outdoor Cases.—Total number of cases, 90. Of these there were—Multiparæ, 76; primiparæ, 14. There were 92 children born altogether—48 boys, and 44 girls. There were 11 stillborn children, and of these there were 2 putrid and 2 premature.

There was only one case fatal to the mother, the cause of death being puerperal peritonitis.

The presentations in the various labours were as follows:—In 1 case, left occipito-posterior; in 1 case, superior extremity; in 2 cases, right occipito-anterior; in 6 cases, breech—all left sacro-anterior; in 80 cases, left occipito-anterior. There were 4 cases of twins, the presentation being breech and head in every case, but one in which both heads presented.

There were 2 cases of abortion, causes unknown; 3 cases of premature labour; and 3 cases in which the child was born with a caul.

There were 2 cases of retained placenta—in one case from hour-glass contraction, in the other from adherent placenta.

There was 1 case of post-partum hæmorrhage.

There was 1 case of placenta prævia, labour occurring at the end of the seventh month.

There was 1 case of forceps, instruments being used owing to pelvic contraction.

There were 3 cases in which turning was performed—in one case of placenta prævia, in one case of presentation of the superior extremity, and in one case of rupture of the cervix uteri, in which also the child was of enormous size.

Average number of cases for last six quarters, about 125 per quarter. Average ratio of forceps cases during last six quarters was 1 in 35; this past quarter it was 1 in 90.

Having been urged to give a communication before the session closes, we have been induced to present a Report of the cases treated in connexion with the new Maternity and Simpson Memorial Hospital during its first quarter, in order to inaugurate a practice which it will be well to continue for the future, as the statistical and other benefits derivable from carefully kept records of special hospitals, with the view to their extended utilization, cannot be doubted.

It so happened that our quarter's rotation of service just terminated began with the opening of the new hospital, and we consider ourselves fortunate in having the privilege of offering its first report to a society with the proceedings of which Simpson's name and fame were so long and so honourably associated. We cannot

feel otherwise than assured, that "The Edinburgh Obstetrical Society" will hail with satisfaction the achievement at length gained, in the erection of a suitable maternity hospital, and welcome from time to time the special reports of its practice which we have now the pleasure of inaugurating, and which, we doubt not, will be ably followed up by our colleagues at the termination of each of their quarterly periods of duty.

It might, perhaps, prove not uninteresting were we to preface our remarks regarding this new hospital by giving some personal experiences of its predecessors; but although full of obstetric and other well-remembered associations, on which we might, did time and space permit, descant at some length, we shall in the meantime refrain from doing so.

When we say that our services extend over the period during which the homes of the institution have been so numerous and so varied, as to include most of the old sites and frequently changing lying-in houses embraced in the struggle for a proper resting-place which has at last been secured; when we mention that our official connexion with the charity started in St John's Street, and has since then accompanied its forced wanderings into Milton House, Minto House, Chapel House, Watson's Hospital, back again to St John's Street, and until now when it has become safely housed at Lauriston; when we thus confess to such a course of acting and ageing in the maternity cause, it need not seem surprising should the obstetric history of our old associate Simpson be well known to us, for of a truth we now can think and look back with a lively interest on the long and anxious hours often spent in friendly co-operation with him, while directing and overcoming many difficult maternity and other cases, and have good reason to regret that proper records of what would now have been considered of unquestionable value were not duly preserved, if for no other reason than that of proving Simpson's early exhibited acumen, and the singularly ready practical resources which he at that time possessed, and afterwards so successfully utilized, as ultimately to stamp his name and fame among the ever-living "men of their time."

This society, which Simpson did so much to keep alive by his studied attendance and brilliant example, while illustrating the fruits of his genius and ripe experience, cannot fail to appreciate, and acknowledge with the utmost satisfaction, the new association of his name with that of an institution from which and through which the practical interest of our meetings has hitherto been, and will doubtless still continue to be, greatly enhanced. In addressing this society, on a former occasion, on the onward progress of obstetric science and art, we considered it as an act of simple duty towards the memory of Simpson's special services, to point to the minutes of our meetings and the records of our proceedings during the many years

in which he proved himself not only the most active, but by far the most distinguished member; and now that our justly celebrated *confrère* has, through the unsparing scythe of Time, "ceased from his labours," and left his deeds and "memories," as all must eventually do, to the due consideration and just acknowledgment of those capable and desirous of judging them aright, this, the "Edinburgh Obstetrical Society," the scene of much of his accomplished work, is in a very special sense bound to express its approbation of what the acting committee, together with the directors, have at last achieved, in permanently associating his world-wide name with an institution in connexion with which so much of his time and attention were devoted, and whereby the "Simpson Memorial" will be strengthened in a practical and otherwise most fitting direction. In taking this opportunity of referring in so special a manner to our new Maternity being also made a Memorial Hospital of our old friend and associate, we feel assured that not only all connected with this society, but the public generally, heartily concur in the wisdom of those who have carried out their well-devised scheme of so appropriately utilizing a liberal portion of the subscribed "Simpson Memorial Fund."

The new premises having been designed expressly for those of a special hospital, and the greatest care having been taken to make it in every way suitable, both as regards the arrangement of the wards and sanitary appliances, the whole aspect and working capabilities of the building present a very marked difference from the places which formerly were only temporarily adapted for the purposes of the institution.

The central block and east wing are only now built, but it is contemplated that the finances of the institution will ere long be in a sufficiently flourishing condition to admit of the completion of the whole architectural plan by the erection of the western wing, which will nearly double the present accommodation for patients. The newly provided wards, which are lofty, lightsome, and exceedingly well ventilated, can accommodate about thirty cases, each of the two long wards having conveniently situated at one end a lavatory, nurses' room, and other conveniences, which are cut off from the body of the wards by roomy and well-aired lobbies. The rooms appropriated for the resident medical officers, medical committee, matron, dispensary, and for general domestic purposes are large and ample, and all arranged on the best modern principles. The kitchen and household offices, together with servants' and other rooms, are situated on the ground floor, while the attic flat of the building is arranged for the sleeping accommodation of nurses, neat and well-aired cubicles being specially fitted up as their dormitory apartments. The hospital, in its sanitary and other arrangements, may therefore, so far as its completion and possession

have yet gone, be considered a success, inasmuch as it ought now, much more than heretofore, to be fitted to dispense its special benefits upon a very needy class of the suffering poor, and still further to prove an important centre of clinical instruction from which the salutary lessons of practical experience may emanate. While we heartily concur in the wishes which were so enthusiastically expressed at the public opening of the hospital towards the accomplishment of the merciful and scientific objects for which the institution is specially designed, we may venture to question whether the dream and desire of Simpson, as was said on that occasion, had yet been realized, so far as maternity accommodation is concerned. We doubt not that, failing the securing of his favourite project of a "Cottage Hospital," for which his voice was often ably raised, he would have rejoiced to witness a Maternity such as we now can boast of, and have proudly acknowledged the honour conferred in perpetuating his memory, by so specially identifying his name with that of an institution erected for the purpose of promoting the knowledge, and extending the benefits of that branch of science and art in which he so greatly distinguished himself. Had he, however, lived to give his counsel regarding a new maternity hospital, he would in all likelihood have striven towards securing, as far as possible, the practically carrying into effect the notions he strongly entertained and strenuously advocated in regard to the danger of having lying-in patients in too close proximity, such as cannot well be avoided in ordinary hospital wards. The correctness of Simpson's views in regard to the evil consequences of undue aggregation, and the importance of studying to secure the more wholesome influences of segregation in parturient cases, is quite beyond dispute, this question now being one of expense rather than of principle, for the difficulty of carrying out the cottage idea, especially in cities, where hospital accommodation is generally most required, must be obvious. But now that the "Simpson Memorial Hospital" is so far completed, although not in accordance with his "cottage" scheme, it might be well to make the best of the premises in that direction, and which might be done by so planning the west and yet-to-be-built wing that, instead of being a repetition of the eastern division,—which chiefly consists of two large wards,—it would contain a series of comparatively small and sanitarily arranged apartments for the better segregation of patients, and more satisfactory selection and admission of married women who may desire the comforts and treatment which a hospital ought to afford. Another and most necessary advantage might thus be attained, viz., that of the being better provided to meet the emergencies which occasionally occur in regard to contagious influence—from want of due accommodation to facilitate the required separation of septic cases—which tend so frequently to increase the mortality in

such hospitals, and which, moreover, in this respect also is of no mean consequence even from a nurse point of view; for it is well known that the safe tending of lying-in patients demands extreme attention, when affected nurses on the one hand, or infected patients on the other, require timeous separation. The welfare of patients while passing through the dangers connected with child-bearing is more a matter of safe and judicious nursing than is generally supposed; and as the prevention of so-called blood-poisoning, from whatever source arising, is of the utmost primary import, every precaution should be taken in this, as in every other direction, to diminish the chances of septic influence, which often so stealthily favours puerperal mortality. We may take another opportunity of discussing this subject at greater length, and only refer to it now to indicate the importance we attach to safe and judicious maternity nursing, and especially in regard to what we always dread in maternity hospitals, viz., the occurrence and propagation of puerperal fever, and which should make us look to our nurses as well as to the proper and sanitary construction of buildings intended for maternity purposes. It too often happens, when this dread of the accoucheur appears in hospital wards, that it is exceedingly difficult to check its progress, except by immediate separation of the affected patient: otherwise it may be necessary to refuse further admissions, if not to shut up the wards during its prevalence; and therefore the vast importance of having the hospital arrangements such as to admit of the necessary treatment of the cases rendered as safe as possible, which can be done only by having abundant separate accommodation such as we have here indicated.

Besides the clinical instruction of medical students and young practitioners, there is the other important educational object of the institution, viz., the special and practical training of midwives and nurses. The necessity for providing good and intelligent nursing, not only for the welfare and comfort of lying-in patients, but for the required and proper assistance of their medical attendants, cannot be gainsaid. The onerous duties of the obstetric practitioner are often greatly influenced by the character and conduct of the nurse he may have to meet or employ; for while the presence and aid of a competent and otherwise reliable tender will usually go far to relieve anxious cares, they may be annoyingly increased through the stupidity and untrustworthy awkwardness which so frequently belong to ignorance. Fortunately, nowadays, a marked difference is noticeable between the modern well-trained nurse and her fast disappearing and less fortunate predecessor—the old-fashioned, tawdry, and comparatively useless, if not even dangerous “howdie,” and which may be easily accounted for by the superior attention given to their education by their special teachers, and in the better arrangement and more extended accommodation

provided for their educational supervision and practical training in hospitals.

These important points have been studiously considered in the construction and arrangement of our new Maternity premises, which have not only provided superior accommodation for a larger number of nurse-pupils, but an arranged scheme for their regular and efficient instruction, under the special teaching of the visiting physicians and the clinical assistance of the resident medical officers.

To meet the demand for admission of nurse-pupils the question of ample accommodation will appear, especially when it is considered that the over-crowding of nurses into one dormitory, even such as that arranged in the new hospital, may possibly lead to mischief, should any of them be required to devote their attention to fever or other contagious cases.

The present is an era in the history of the institution, which, notwithstanding its necessity and unquestionable claims on the sympathy and support of the charitably disposed, has hitherto been sadly overlooked, being too long left without a settled home, begging its existence as if the mendicacy of illegal maternity should be unfelt-for and unrelieved. And while in the mood of referring to this matter, it may not be considered inexcusable further to remark, in the interests of this and similar institutions, that the more special purposes for which maternity hospitals exist are by too many considered not in accord with the spirit of propriety; and the doubt thus occasioned leads them to withhold their countenance from such institutions, on the ground that ordinary sympathy is here not only unmerited but dangerous, because of the possibility of diminishing the poignancy of the brand which, forsooth, ought to be allowed to rankle unheeded and uncared for in the tried hearts and saddened consciences of poor maternity unfortunates. It is difficult to discover even the shadow of reason in the absurd idea that maternity hospitals tend to foster the departure from virtue on the score of their mercifully proffered protection and care. Those who imagine that the frailty of woman is such as to lead her into special folly because of her knowledge as to where, in the event of a dire necessity, she may pillow a weary head and suffer a painful shame, are wrong in fancy that even the boldest or the frailest of the sex ever brave the risks of maternity with the view or for the purpose of gaining admission into a specially provided hospital. Apart, however, from all this, besides yielding succour to such in their sorest time of need, when they cannot command even a temporary home, the advantages of the charity to married and needy applicants, who will now more than ever be induced to take advantage of the comfort which the new hospital affords, cannot be doubted.

In presenting a medical report, it may be out of place to dwell on

hospital buildings rather than on cases, but there are exceptional circumstances which go far to justify the adoption of such a course as that now pursued ; and seeing that it is our intention, as it will be our duty, to extend our report so as to remark on some of the more interesting cases which it contains, an ample enough excuse will, we trust, be found in the special interest taken in the "New Royal Maternity and Simpson Memorial Hospital ;" and should any more cogent reason be deemed necessary, we plead that of our being not only the senior acting medical officer of, but the first officiating physician in a recently acquired and newly opened hospital, the history and progress of which will now be more strictly inquired after.

In presenting the first report of what we hope will prove the beginning of a long-continued record of an institution, the previous history and proceedings of which have not hitherto been duly preserved, we trust that what we have here feebly expressed will tend to promote the public recognition and support which it deserves, and that, as the beginnings of new, like the early tracings of old, and especially of charitable, institutions frequently prove of no small interest and importance, the observations now made in connexion with the opening of this hospital may on this score also prove acceptable.

Although the old Maternity Hospitals and those associated in the working of them have been long actively engaged in conferring merciful benefits, and promoting the educational objects of the charity in the always important department of practice for which institutions of the kind are specially designed, it cannot be doubted that the better and more complete arrangements provided in the new hospital will go far to fortify the efforts of those engaged in the practical and tutorial duties connected with the institution, and thus enable them to keep up the obstetric character of the school which Simpson laboured so much and so well to establish, and which doubtless makes the present occasion of associating his name with the new hospital more than usually interesting, and may excuse our thus dwelling on the circumstance, and referring, as we have done, to the special features of the building, the practical duties connected with which we have had the satisfaction of commencing.

Part Second.

REVIEWS.

The Microscopic Organisms found in the Blood of Man and Animals, and their Relation to Disease, 1879. By TIMOTHY RICHARDS LEWIS, M.B., Special Assistant to the Sanitary Commissioner with the Government in India.

THE first part of this valuable treatise gives a very good *résumé* of what is known of the vegetable organisms found in the blood, with some original observations by the author. The literature of this department of botany has grown to such inordinate proportions within the last few years, that we cannot but feel grateful to any one who has found patience to wander through the intricacies of the subject, and to place the salient points in so clear a light as the author has done. Mr Lewis has managed to distil a very concentrated essence out of a vast mass of raw material, and any one wishing to see at a glance how much has been done in the elucidation of some of the very complex problems connected with the subject will do well to peruse this part of the work. It gives an excellent synopsis of the opinions held by most of our greatest cryptogamic botanists, and shows how much there is still to do in this line of research. The author does not seem to be a disciple of the "contagium vivum" theory, believing as he does that the poison of septic fluids is other than the organisms found in them.

Part II. is descriptive of the protozoa found in the blood, and in it a flagellated organism is described as occurring in the blood of the rat, which apparently had not previously been described.

Part III., from its originality, is perhaps that which will be of greatest interest to most readers, and treats of the helminthic hæmatozoa of man and animals. Most of us are already familiar, from Mr Lewis's descriptions, with the *filaria sanguinis hominis*, discovered by him some years since, and afterwards studied in relation to disease by Manson, Bancroft, and others. The first published record of the occurrence of this nematoid hæmatozoon in the human blood was given by the author in a paper submitted to the Government in 1872, and since then his observations have been confirmed and extended in China by Manson, in Australia by Bancroft, by Sonsino in Cairo, and by Gabb in this country. It appears that nematoid worms are of frequent occurrence in the blood of the lower animals in India. The blood of the Indian jay and crow is infested by them, and two or possibly three mature parasites have been found associated with embryos in dogs. They infest the substance of the heart, arterial walls, and subcutaneous

textures as well as the blood, and, curiously enough, seem to give rise to no particular symptoms. The filaria, so abundantly found in the human blood in India, is in an embryonic condition, and does not seem often to reach maturity in its human host. Bancroft described the mature worm as occurring in an abscess and in a hydrocele of the cord; and Lewis, after many hours' search, found it once in an instance of naevoid elephantiasis. The embryo worm found in the human blood is of small size, a little less than a coloured blood-corpuscle in diameter, and might be easily passed over in a hurried examination. As many as eight or nine of them may be found in one microscopic preparation of the blood. The mature worm, however, appears to be much larger. The author mentions the following points among others as distinctive of the specimens of the mature worms he found in the case above alluded to. They were in a mangled condition, due to the difficulty of isolating them, but, notwithstanding, exhibited very lively movements. They were of a white colour, and the cuticle was smooth and devoid of transverse markings, except such as were due to the contraction of the subjacent muscular walls. The male measured 1-180th of an inch transversely and half an inch in length, while the portion of the female secured measured $1\frac{1}{2}$ inch, and its greatest width was 1-100th inch. The female was packed with ova and embryos in various stages of development; the latter, especially those of them which were mature, manifesting active movements. The head was slightly club-shaped; the mouth did not show any very distinctly marked labial subdivisions, nor were there any chitinous processes evident either before or after death. The œsophagus was faintly striated, and shaded off imperceptibly into the intestinal tube, the latter being filled with moleculo-granular matter. The ovum had no distinct shell, the only covering being a thin delicate pellicle, which was easily compressed, so that the ovum was constantly liable to differ in shape.

The manner in which the filariæ gain entrance to the human system has been the subject of special investigation by Manson in China, and Lewis has been able to confirm all that the former author wrote in regard to the mosquito acting as an intermediate host. It can be demonstrated that, after the mosquito has fed on a filaria-affected person, the stomach of the insect will contain living examples of the hæmatozoon, and that the latter will make considerable progress towards maturity therein in the course of a few days. They do not become digested in the stomach of the mosquito, but make their way into its tissues, and then reach a high state of development. He has never seen the worm reach full development in the body of the mosquito, the insect always having died before this took place, but the stage reached was so advanced that there seems a great probability that the mosquito acts as the intermediate host. Lewis found that fourteen per cent. of the insects caught

at random contained filariæ. The manner in which they gain admission to the human body is supposed to be that they escape from the body of the mosquito when the latter dies in the water, to which it betakes itself, and the filariæ thus find their way into the human system.

So far as the author's observations go, he does not seem to have distinctly made out that these nematoid blood-parasites produce any constant symptoms. He has, however, always found them associated with two diseases, namely chyluria and lymph-scrutum or naevoid elephantiasis, but whether they are the cause of these he cannot say, and seems to regard this relation as doubtful. The fact of their being abundantly found in the blood of persons who do not suffer from these affections, is against their being the cause. It is possible that a special nematoid is capable of originating these diseases, while others prove harmless, for, as the author believes, they may be the embryos of various species of nematoids and yet bear a close resemblance to each other in their embryonic state. That beings become asphyxiated on account of their presence in the blood he regards as untenable, and, indeed, to use the author's own words, "So far as we at present know, it would seem that the presence of embryos in the blood, no matter how numerous, exercise no marked deleterious effect on the organism."

In conclusion, we must express the great satisfaction we have had in perusing Mr Lewis's book, and we are convinced that it will be the feeling of all who read it, that it bears the stamp of most painstaking and original scientific research in a direction which some day may lead to valuable results.

On Certain Effects of Starvation on Vegetable and Animal Tissues, 1879. By D. D. CUNNINGHAM, M.B., Special Assistant to the Sanitary Commissioner with the Government of India.

THE author of this Government Report has made a series of experiments on plants and animals with a view to determine what histological changes ensue as the effect of insufficient food supply or its complete withdrawal. He has further applied the results of his experiments to the explanation of the so-called famine-diarrhoea or famine dysentery. The experiments on vegetable organisms were conducted on plants belonging to the mucorine order of fungi, and consisted in cultivating them or endeavouring to cultivate them in distilled water. A fatty change and ultimate disintegration of the protoplasm seem to have been the general results of insufficient nutrition when applied to the fungi experimented upon.

The experiments on animals were made on tadpoles, on account

of their tissues being so transparent as to admit of microscopic observations without much disturbance. The chief phenomenon noticed after keeping them in distilled water for different periods seems to have been a desquamation and fatty degeneration of the epithelium of the intestinal canal. There was also noticed, at the same time, the usual wasting in the other organs. Mr Cunningham wishes to apply these observations to the explanation of the dysentery so frequently found in connexion with a famine-stricken population. In the post-mortem examinations that he has made of natives dying from famine he found the intestine thin and transparent, with absorption of the fatty textures around it. In some cases the appearance of the mucous membrane was like that of ordinary dysentery, but in others this was not so, the chief lesion noticed being the absence of the epithelial covering. He endeavours to draw a parallel between these appearances and those found in tadpoles as a result of starvation, and would account for the prevalence of diarrhoea in those suffering from inanition by the loss of the epithelial covering of the mucous membrane of the intestine. Whether such a comparison can be drawn may seem doubtful to many. We should like to know if the same lesions occur in the mucous membrane of the intestine of adult mammals as an effect of starvation before coming to any definite conclusion. There is always a fallacy liable to complicate such observations in man, namely, that persons in a protracted state of starvation are undoubtedly much more liable to diseases of a zymotic type than others; and until we can absolutely prove that changes similar to what the author describes in the intestine of the tadpole occur in the intestine of mammals as a result of starvation alone, there are grave reasons against accepting such a *post hoc ergo propter hoc* argument. Mr Cunningham bases a great part of his argument on the fact, that he found the epithelium of the mucous membrane of the intestine in those subjects dissected by him who had died from starvation in a state of desquamation, and usually absent. We would ask him whether he ever found it entire in a *healthy human intestine*. We certainly never have in this country, a very short time apparently sufficing to permit of almost complete digestion. These are fallacies which seem to us to seriously damage the theory which the author has set up. It is certainly ingenious, but, we must say, requires further experimental proof for its conclusive elucidation.

The changes described in other organs seem to be very much the same as those recorded by Voit, Bischoff, Bidder, and Schmidt as occurring in the lower animals in starvation. We should be glad to hear that Mr Cunningham has continued this most interesting inquiry.

Notes for Students: Pathological Anatomy: A Guide in the Post-Mortem Room. By ROBERT J. LEE, M.A., M.D. Cantab., Fellow of the Royal College of Physicians, formerly Lecturer on Pathology and Medical Jurisprudence at the Westminster Hospital, late Curator of the Museum of St George's Hospital.

"THESE notes," as the preface says, "are intended to assist the student when he begins to observe for himself the effects of disease on the healthy tissues of the body, and to acquaint him with the terms used in describing those changes in their colour, density, and other qualities which are distinguished by the eye and the touch, and are studied under the name of morbid anatomy."

We cannot say that the author has been successful, for if he intends this little treatise as a guide to a beginner, the only result we can see as likely to ensue in the mind of the unfortunate aspirant is total confusion. What could be made out of the following, for instance?—"Emphysema is caused by vesicles full of air." "Pneumonia or inflammation of the lungs begins with hyperæmia or congestion, causing more or less redness; is followed by *red* or *gray hepatization*: the first is exudation of lymph cells; the second of pus cells into the air vesicles." "Tubercle is a pathological change in the tissue of the lung, that is, in the walls of the air vesicles, from which a permanent destruction of the tissue results." "The most common disease of the muscular tissue is the formation of FIBROUS TUMOURS in the walls of the uterus."

The author dwells on colour as of importance. What does he mean by a "yellowish-white colour"? *Tincture* of iodine is recommended for the detection of amyloid disease. The remarks on the kidney are beyond our comprehension.

We think the author has gone out of his depth, and should carefully revise his work if it reaches a second edition.

An Atlas of Illustrations of Pathology. Fasciculus I. Diseases of the Kidney. The New Sydenham Society.

If gaudiness of colour be a criterion of excellence in painting, this production of the Sydenham Society should certainly stand pre-eminent. The respective artists have certainly done their best to make things look pretty, but that they have succeeded in representing what was actually before them, we somewhat doubt. If so, we must say that kidneys in London certainly differ from those seen in the north, and must combine the most extraordinary contrasts of garish colour well imaginable. This, however, does not hold good of the whole of them. There are one or two which strike the observer as being like the original; but, unfortunately, they form the exception, not the rule. Many of them look as if they had been

taken from preserved preparations in museums, the colours being subsequently added to suit the taste and at the discretion of the artists. Were the descriptions at all adequate to the specimens, it might have aided one in understanding what the drawings represented; and really we expected, from the names appended to the publication, that the letterpress would, at least, have been up to the mark. In this, however, we have also been disappointed. What, for instance, is meant by this description of figure 1, plate i.:—"The ureter is much thickened and enlarged, and its lining membrane much diseased?" It is more like the language of popular treatises on morbid anatomy than that emanating from the authorities who are responsible for the production of the work. The description of the so-called scrofulous and scarlatinal kidneys forms a glorious mass of confusion. The present number bears evidence of having been loosely compiled, and we hope that the following numbers may exhibit evidence of more careful preparation.

Minor Gynecological Operations and Appliances for the Use of Students. By J. HALLIDAY CROOM, M.B., M.R.C.P.E., F.R.C.S.E., Lecturer on Midwifery and the Diseases of Women at the School of Medicine, Edinburgh, Physician Royal Maternity Hospital, etc. E. & S. Livingstone, 57 South Bridge: 1879.

IN writing this handy little manual, Dr Halliday Croom has done good service to the student of medicine and the young practitioner. We feel confident it will prove a success, seeing that it supplies a felt want. Large manuals of gynecology there are in plenty, but their size hinders their usefulness to the student. He has no time, and less inclination, to wade through them. Even if courageous enough to do so, he will probably profit little by his exercise, seeing that they do not tell him with sufficient precision what he really needs, viz., how to investigate and treat an ordinary gynecological case. It is the great merit of Dr Croom's manual that it does this thoroughly and accurately.

The manual is divided into two parts—Diagnostic and Therapeutic. Under the first heading the various methods of examination—viz., simple touch, the use of the chief specula, the sound, sponge-tents, etc.—are given. The bi-manual method of examination is described better than we have ever seen it by any author,—although, strange to say, the diagram illustrating it is wrong so far as the examiner's hands are concerned. The description of the method of using Sim's speculum is good, but not so clear and scientific as it should be. The section on therapeutics is carefully and thoroughly done, and little of real importance is omitted. The only point on which we are disposed to be critical is in regard to the illustrations. They are all too sombre, and rather coarsely executed. The vagina is always

depicted in that state of dilatation which so flatly contradicts the reality, as well as the accurate description Dr Croom himself gives of it at page 3. The coloured plates of erosions of the os are admirable. It is a pity, however, that a "split cervix" is not figured, and that Emmet's valuable contributions to the pathology of the so-called ulcerated os are omitted. We cordially recommend this work to all, and feel confident that a second and improved edition will soon be issued.

Dispauperization: A Popular Treatise on Poor-law Evils and their Remedies. By J. R. PRETYMAN, M.A. Second edition, revised and enlarged. London: Longmans, Green, & Co: 1878.

THE subject of this treatise, although not strictly professional, is one which necessarily obtrudes itself upon the attention of all medical men; and they are specially qualified for forming a just and wise opinion regarding it. In saying this, we do not forget that the late philanthropic Professor W. P. Alison allowed his benevolence to lead him, as we think, to a very erroneous conclusion, when he advocated a compulsory and indiscriminate provision for the indigent, irrespective of their moral character and other antecedents. It is satisfactory to find in Mr Pretyman a stanch supporter of the views which Chalmers, with prophetic voice, thundered in the ears of a former generation, and with which Thomas Carlyle, in his own peculiar style, has been familiarizing our own. We have read the book with much satisfaction. It is evidently the outcome of careful research and earnest conviction. It is well-written, clear in style, and logical in conception. Our statesmen and legislators would do well were they to consider it carefully, and make common cause in seriously trying to remedy a great *blunder* committed in the days of Elizabeth, and still endangering, with growing hurtfulness, the welfare of this great country. The titles of the eight chapters into which the book is divided will give an idea of its plan. 1. Poor-law History; 2. Terms "Labouring" and "Working" Classes; 3. Material Mischief to the hard-working Classes; 4. Demoralization of the Lower Classes; 5. Effect of the Poor-law on Classes above; 6. Economic Aspect of the Poor-law; 7. Steps in Abolition and Remedial Measures; 8. Self-help and Voluntary Relief.

The following paragraph may be regarded as the author's summing up:—"If the above statements and arguments be correct, it is no dream of enthusiasm, but a conviction of sober sense, to believe that, could a man, with the munificent zeal of a Peabody, spend the united fortunes of the Grosvenors, the Gowers, the Rothschilds, all the wealth stored or represented in the Bank of England and in Lombard Street, in attempting to ameliorate the condition of the masses, and were he to pass all his days in the best-directed

application of these means to this purpose, he would accomplish but an infinitesimal amount of the benefit which that man would accomplish who should bring the intelligence of the country to recognise the genuine philanthropy of a gradual abolition of the Poor-law system,—a system which, interfering with the natural and providential order and course of things in the constitution and government of human society, indefinitely increases the evil which it proposes to remedy, and degrades while it impoverishes those whom it was intended to benefit.”

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LVIII.—MEETING X.

Wednesday, 17th June 1879.—Dr ARGYLL ROBERTSON *in the Chair.*

EXHIBITION OF PATHOLOGICAL SPECIMENS.

I. *Dr Littlejohn* showed (1) the HEART from a case of sudden death. The history was that two brothers, both intoxicated, were struggling together when one suddenly died. At first it looked very like a case of violence. On post-mortem, four hours after death, he was surprised to find rigidity present. There were no marks of violence. The heart was found enlarged and weighed $13\frac{1}{2}$ oz. The left ventricle was dilated and contained dark fluid blood; the pericardium was adherent by a small patch. The aorta was small and the valves competent. In both lateral ventricles of the brain there was a little clear serum. The death had evidently resulted from chronic heart disease. The deceased was a pale thin lad, a hatter by profession, and was married. He had never complained of oppression of breathing, but within the last year and a half had severe pain at the pit of the stomach. His master also said that when taxed for any fault he always got extremely pale. Dr Hamilton has kindly examined the heart, and would now give them an account of its condition.

Mr D. J. Hamilton said that the heart was a beautiful specimen of fibrous myocarditis, and illustrated the fact that the disease commences with pericarditis and endocarditis. At some parts of the ventricle there was no muscular tissue left. The aortic orifice was small, but the chief lesion was the myocarditis of the left ventricle.

(2.) The PARTS of a case of confluent smallpox. The infection had been traced to London and Dublin. The patient was a boy nine years of age, and had been in the room with a smallpox patient. He died on the 15th or 16th day. He had severe hæmorrhage from the bowel. Aitken, in his *Practice of Medicine*, gives a case of smallpox where there were pustules on the large intestine. In this case, however, there was a diphtheritic condition of the large intestine. There was also some lobular pneumonia, diphtheria of the windpipe, and *œdema glottidis*. Death was evidently due to the severity of the eruption.

II. *Dr Craig* exhibited a SPECIMEN of the ESSENTIAL OIL OF ALOES. This oil is a pale yellow mobile liquid, sp. gr. 0·863, and boils at from 266° to 271° C. It is to the presence of this oil that the odour of aloes is due. It exists in very small quantity in aloes, only about two fluid drachms being obtained from 500 lb. of aloes. This oil has a resemblance in taste and smell to the oil of peppermint. The boiling point, however, of the oil of peppermint is only 190° C. Although aloes has been used in medicine for upwards of 2000 years, its volatile oil was first discovered in 1873 by Messrs T. & H. Smith & Co., the well-known chemists of this city, and the discoverers of aloin, the active principle of aloes. In that year they succeeded in isolating a small quantity of the "oleum aloes," and exhibited it that same year at the Vienna Exhibition. That specimen was afterwards presented to the Pharmaceutical Society of London, and unfortunately the bottle containing it was broken, and the oil lost. This year they again succeeded in obtaining a small quantity of the oil from 500 lb. of Barbadoes aloes. When it is remembered, that to obtain two fluid drachms of this oil, it is necessary to distil about 500 gallons of fluid, the members of the Society will have some idea of the difficulty of obtaining this substance. In the specimen exhibited the oil is floating on the surface of a colourless, mobile, ethereal liquid of a sp. gr. 0·95, being the liquid from which the oil of aloes was finally distilled. The specimen exhibited is interesting, on account of its extreme rarity, being in all likelihood the only specimen of this oil in the world. Through the kindness of the Messrs Smith I am enabled to exhibit it to the members of this Society. Of course there has been no opportunity of investigating its therapeutic qualities, but from its nature it is likely an aromatic and antispasmodic.

III. *Dr A. G. Miller* showed a LARGE TUMOUR of the THIGH. Sixteen weeks before the amputation, the patient suffered from pain on the inner aspect of the knee, for which his medical attendant kept him in bed. The tumour soon appeared and increased to an enormous extent, as it was about 23 inches in circumference. It was punctured by the medical attendant a week before the amputation, but only blood came. When Dr Miller saw the patient, four days

afterwards, he was extremely anæmic. He was then sent to Dr P. H. Watson for operation at the Infirmary; but Dr Watson kindly handed the case over to him. He amputated in the upper third of the thigh. There was little loss of blood, but death took place a few hours afterwards. When removed from the theatre he seemed dead. The extremities were cold, but the heart's action was fair. Stimulants improved the pulse, but hastened the end, in his opinion.

IV. *Mr Joseph Bell* showed an UNIQUE SPECIMEN. He had been asked to see a young girl æt. 14, who, three months before, was supposed to have had a fracture near the wrist-joint. Pronation and supination were perfect, but flexion was very painful. The history was that she had fallen in the way Colles' fracture is brought about. There was no distortion, no lateral displacement, only a feeling of projection. The fingers were moved only by their intrinsic muscles. The hardness was so localized that he made an incision over it and pulled out the inch of knitting-needle he now showed them. No one had even suspected its presence.

V. *Dr Henderson* then read a paper on ELEPHANTIASIS ARABUM, which will appear in a future number of this Journal.

The President felt sure that he expressed the feeling of the meeting in cordially thanking Dr Henderson for his able and interesting paper. The disease was one of which instances were rare in this country.

Dr P. H. Watson was convinced that the President's remarks on the ability of Dr Henderson's paper would be echoed by all present. It was highly creditable to Dr Henderson, that in the midst of a much-needed holiday, he should have found time to bring before them the elaborate communication with which the Society had been favoured on this and a previous occasion. The subject was interesting to him, because some years ago he had a case of elephantiasis under his charge, where he applied a ligature to the superficial femoral. The result was not a permanent cure, as after the patient left hospital the limb increased in size, became inflamed, and excoriation and sores appeared on the ankle. He again therefore came under his charge, and as the treatment by the ligature was not then exploded, the common iliac was tied. That was a great many years ago, when antiseptics were in their infancy, and carbolic putty was the dressing employed. Twenty-five days after the catgut ligature was applied a pulsatile swelling appeared along the course of the iliac vessel. From the seat of the ligature oozing began, and he therefore was obliged to apply the aortic clamp, and open up the wound to see what was to be done. With his finger he plugged the stump, but finding it was impossible to apply a ligature to the iliac artery again, he tied the abdominal aorta. The patient died, however, from gangrene of both legs. He admired all the practical observa-

tions Dr Henderson had made, but regretted the absence of all remarks on the pathology of the disease. The lymphatic system was undoubtedly credited with it; but whether it was simply inflammatory or due to the introduction of entozoa setting up irritation, was a matter of doubt. The whole subject was one of interest, and they were indebted to Dr Henderson for bringing it before them to-night in its practical aspect.

Mr Bell felt they were all agreed as to the value of Dr Henderson's paper. Probably Dr Henderson was not sure of the pathology of the disease, and had thought it best to treat the subject in its practical bearings only. At present he had in his ward a case of swelled leg, where the veins and lymphatics were affected. Martin's bandage had been applied with good results; but he was afraid these would not be permanent. He was sorry he had made no observations in this case on the excretion of urine as the swelling diminished. At first he thought of tying the external iliac, but had given up the idea owing to the great improvement under bandaging. He well remembered Dr Watson's case, and would certainly never forget the coolness, dexterity, and brilliancy with which Dr Watson had performed one of the rarest operations in surgery. He had also experience in the removal of the elephantiasis when it affected the scrotum, as he had assisted Syme in one of his operations—Syme dissecting out the one testicle and he the other. Everything else except the penis was removed, so that the man presented a most absurd appearance with his testicles wrapped in cotton-wool, as no skin covering could be saved. The patient made a good recovery; and perhaps it might be interesting to know that he came back some time afterwards with a smart gonorrhœa. The organs had evidently acquired enough covering to get him into mischief.

Surgeon-Major Black had seen such cases. Malaria and bad water were causes of it, he thought. Sir Joseph Fayrer's theory was a highly probable one. He had seen no post-mortems, but would like to know if any observations had been made on the state of the spleen in such cases.

Dr Allan Jamieson had listened with interest to Dr Henderson's paper, although he would have liked some remarks on the pathology of the disease. He had lately seen a paper where Dr Manson's latest views were given. These were that the filaria got into the system, and then into the lymphatics. If inflammation was set up in the lymphatic glands, they did not pass into the blood. If not, then they were found in the blood, and chyluria existed. One interesting point was the part mosquitoes played in spreading the disease.

Dr Henderson thanked the members for the reception accorded to his paper. Dr Manson's papers on elephantiasis had attracted much attention among the doctors practising in China when they were published there. Along with Dr Macleod he had very

carefully examined the blood of the patients operated on last year for scrotal tumour, but had failed to find any filaria. Post-mortems were very difficult to obtain in China; in India, where they were more easily got, fatty degeneration of various internal organs had been noted.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION XXXVIII.—MEETING XIII.

Wednesday, 23d July 1879.—Dr WILSON, President, in the Chair.

Dr L. Lindsay Rowland, M.D., Oregon, U.S.A.; Mr A. W. Oakes, and Mr John Johnston were admitted Ordinary Fellows.

I. *Professor Simpson* exhibited a FIBROID POLYPUS removed by means of the écraseur from an elderly patient who had been subject to frequent losses of blood. The peculiarity was that it grew from the cervix uteri on the right side. He could only remember to have seen one other instance of a fibroid tumour originating clearly, as this had done, in the cervix.

II. *Dr Hart* exhibited a PLACENTA from a case in which he had induced premature labour. The patient had been pregnant thirteen times, but only one child had been born alive, the others having always died about the full time. On this occasion he brought on labour in the usual manner at the eighth month. As the placenta got separated by the bougie employed to detach the membranes, he was obliged to dilate quickly with Barnes's bags and turn. The child was born alive, and is now doing well. The mother made a good recovery. During the whole labour there were no pains, but the third stage presented no difficulty.

III. *Dr James Carmichael* exhibited FŒTUS and PLACENTA, fourth month's, from a patient attended by a pupil at the New Town Dispensary. From the appearance of the placenta it was evident that hæmorrhage had taken place, causing extensive separation. There was a large mass of clot, almost as big as the placenta itself, adhering to the maternal surface, and numerous extravasations could be observed immediately underneath the membranes.

IV. *Dr Keiller* read a REPORT OF CASES treated in the new Maternity and Simpson Memorial Hospital in the first quarter, during which time he had been on duty. He trusted that in future there would be regular reports published from the practice of the hospital.

The *President* thanked Dr Keiller for his report (which appears at page 322 of this number) as inaugurating a system which, if carried out with regularity, could not fail to be of very great use to the profession, and especially to obstetricians.

Dr Craig thought the publication of the Maternity Hospital statistics in the *Transactions* would greatly enhance the value of this record of our proceedings.

V. *Dr Hart* read a paper on a SOURCE OF ERROR IN THE CLINICAL ESTIMATION OF ELONGATION OF THE CERVIX DURING LABOUR, which appeared at p. 228 of this Journal.

The *President* thanked *Dr Hart* for his very interesting communication.

Professor Simpson thought the observations were most instructive, as showing the practical value of a scientifically observed and recorded anatomical fact, of which we might possibly come to make frequent use, if we follow *Thomas's* suggestion, and perform Cæsarean section without cutting into the peritoneum.

MEETING XIV.

Wednesday, 30th July 1879.—*Dr WILSON, President, in the Chair.*

I. *Dr Wilson* showed a preparation of diseased RIGHT OVARY, taken post-mortem from a patient, aged 72, a few days ago. When first seen she was suffering from effusion into the right pleura and the peritoneum. The former increased so much that he was obliged to aspirate her two or three times, and drew off a very large quantity on each occasion. Some time after the ascites increased, and he was obliged to tap the abdomen. But as the effusion speedily recurred, he asked *Dr T. Keith* to see her, in order to see if anything further could be done. He examined her, and considered the case malignant, and recommended no interference. He had to tap her again, and this time it was followed by symptoms of slight peritonitis, and she gradually sank.

II. *Professor Simpson* showed ABORTION of a complete OVUM, with membranes unusually perfect. After the third month the patient had discharges of blood; uterus did not enlarge; sponge-tent was introduced, and the entire ovum was expelled during the act of defecation.

III. *Professor Simpson* showed *Mr Lawson Tait's* APPARATUS FOR RAPID DILATATION OF THE CERVIX UTERI, and in doing so remarked upon various methods already tried with a view to this purpose. *Mr Tait's* instrument consisted of a series of graduated cones, fixed by means of a long stem and elastic bands. He thought an improvement would be to have the rod curved, as in *Aveling's* repositor, instead of straight. No doubt the idea of dilating the cervix by keeping continuous pressure with elastic bands in *Mr*

Tait's instrument suggested itself from Mr Tait's own instrument for re-position of the inverted uterus.

IV. *Professor Simpson* showed the INTRA-UTERINE SOFT RUBBER SPRING STEM PESSARY invented by Dr Campbell, of Augusta, Georgia. The stem was of indiarubber, hollow, with a spring metallic stem within to facilitate introduction. It was light and soft, and, he thought, would be found easily applicable, and free from some of the disadvantages of other pessaries.

V. *Professor Simpson* read a paper on the USE OF THE VOLSELLA IN GYNECOLOGY, which appears at p. 289 of this Journal.

Dr Macdonald had listened with pleasure to Dr Simpson's paper, and corroborated all he had said regarding the use of the volsella. He thought it strange that this instrument should be omitted in books, and Sims's hook so frequently mentioned, which was a much less useful instrument. He was regularly in the habit of using the volsella very much in preference to the latter. In Emmet's operation he found it of great use, and much better than any number of Sims's hooks. He appreciated the importance of this subject, and considered that Dr Simpson had done good service, especially in drawing the attention of the younger gynecologists to its advantages. Much suffering to woman-kind could be easily prevented if only general practitioners had the courage to perform the appropriate operations. These as a rule were not difficult to perform, and the present paper laid clearly before the profession a substantial aid in all manipulations on the cervix uteri. In introducing sponge and tangle-tents, it was very useful in straightening the cervix, and bringing the os uteri into view, and thus greatly facilitating the operation. He now taught that the volsella should be used in all such cases.

Dr Croom did not quite agree with Dr Simpson as to use of volsellæ being quite painless. It was remarkable how easily the cervix was pulled down to the ostium vaginæ. Use of the volsella is great in pulling down the uterus when we put two fingers in the rectum. He also reminded the Society how we might examine by introducing after dilatation a finger into the bladder.

Professor Simpson stated that, from Dr Macdonald's description of the tenaculum used by him, it was not exactly the pattern of Sims's instrument, which had a very slight curve—in fact, a bend quite at right angles to the stem, and with a very small curve at the tip. He had tried to indicate the main conditions in which the volsella was useful, although, perhaps, the list was not exhaustive. He had not wished to make the paper too long, otherwise he might have detailed many special cases illustrative of the operative uses and methods of exploration with the volsella. He was more anxious to bring the matter before the Society on account of its being overlooked in many works on gynecology. As to the pain, he did not mean to imply that its use was painless. He thought

the pain in general was only on the first grasp of the instrument; afterwards the pain was so slight that the patient might be induced by a string attached to volsella to pull down the uterus while we were applying medicaments to it.

V. *Dr Underhill* communicated note on ADHERENT PREPUCE as a common cause of PHIMOSIS in young children. I have recently had an opportunity of observing several cases of this disease in young boys from 1½ years up to 10, and in all of them the conditions, both as to symptoms and treatment, were the same. They were brought to me by their mothers, who complained that they cried at the time of making water, that they made it too often, and that they seemed to have some discomfort about the penis, as shown by pulling at it occasionally. On examination the orifice of the prepuce appeared very small, and it was not possible to retract it more than just enough to expose the orifice of the urethra, sometimes not so much. In some of them the extremity of the prepuce appeared large enough, but retraction was prevented by an apparently constricted portion lower down, and just external to the glans. Now, in the five cases of this kind which I have seen at the Sick Children's Hospital and elsewhere within the last twelve months, the disorder was due entirely to *adhesion of the prepuce to the surface of the glans*. On attempting to retract the prepuce the cases looked at first very like organic phimosis, requiring the knife before retraction could be accomplished, but on passing a well-oiled probe between the prepuce and the glans a close adhesion between them was found to exist. This adhesion was readily separated by the probe, though it took some time to do, and I thought it wise to give a few whiffs of chloroform lest the child should be injured while struggling and kicking. When the prepuce is entirely retracted there were found lumps of white wax-like secretion lying in the sulcus behind the glans, and some of the same secretion in smaller nodules was sticking to the surface of the glans. A daily retraction and the use of a little oil completes the cure. I draw attention to this very common cause of phimosis because it is very apt to be overlooked, and because some of the cases I have seen would undoubtedly have been set down to a contracted orifice had they occurred to me before I became aware of the frequency of adherent prepuce. In all cases of phimosis in children this condition should be looked for before any operation for circumcision is performed. In one case which I operated on myself two years ago the prepuce was closely adherent. Had I been aware of the significance of this fact at that time I might have saved the child much suffering and myself much annoyance.

Professor Simpson thought the communication interesting. Although he had not seen many cases of this kind, he was struck with its analogy to adhesion of the labia in girls.

Dr Croom mentioned that *Dr Watson* had drawn his attention to

this fact some years ago. He thought it might be better to perform circumcision in these cases.

Dr Macdonald said he would be anxious to know whether this mode of treating these adhesions would effect a permanent cure, or whether there would not be a return to the phimosis. If the method proposed proved permanent it would indeed be much preferable to circumcision, which, in a child of tender years, was always an operation of considerable seriousness. He understood, also, that though the adhesions were at times real, they more frequently were apparent, being due to the action of those inspissated sebaceous masses which *Dr Underhill* had so well described in the paper. If there was any chance of the phimosis returning, he agreed with *Dr Croom* as to the need of the operation of circumcision, as it would tend to do away with liability to epithelioma of penis in old age, which surgeons regarded as largely the result of phimosis.

Professor Simpson would rather in these cases prefer the operation he had seen performed by *Dr La Pierre* of Berlin, of simply splitting up the prepuce to that of cutting off a portion.

ADDRESS TO STUDENTS, 1879-80.

BEFORE another month has passed, the great Medical School of Edinburgh—embracing under that name the time-honoured portals of our University and the modern buildings of the extramural school—will be teeming with young men full of energy, enthusiasm, and hopeful aspirations. It is impossible for any one, who thinks at all, to contemplate such an occasion as the commencement of a new winter session without looking back on the venerable past before he looks forward to the great possibilities of the future which await these students, both individually and in the aggregate. Most of them can have very inadequate conceptions—how can it be otherwise?—of what has been done in former days by successive generations of eminent and even illustrious men who have studied, practised, or taught their profession in this ancient seat of learning; and therefore they cannot but lack, at the beginning of their connexion with it, one great inducement, one great stimulus to zeal and devotedness in the studies on which they are entering. They must in the meantime take it upon our assurance, and on the testimony of all who are familiar with the modern history of the healing art, that no greater names are to be met with anywhere than some of those whom our school justly appropriates as her own. A cordial recognition of the fact now stated, accepted traditionally at first, and afterwards verified by the perusal of enduring monographs and of biographies, is very important to all young men who would

address themselves to the really hard and stern work of the curriculum set before them. We believe that a *genius loci* is more than an imagination. Each place has its own, and those aspirants act wisely who ascertain beforehand what it consists in, that they may cordially and intelligently try to be animated by it. If you wish to be successful and eminent as a British merchant, learn your business in some great mart, where enterprise and wisdom and honourable dealing have become traditional for generations, and where bright names, associated with such qualities, are remembered and honoured with universal respect by the community. In like manner, if you wish to be a great surgeon, a great physician, or a great anatomist, choose a school where men have handed down that reputation through successive generations; and so, breathing an intellectual, an elevating, a quickening atmosphere, you will study with special buoyancy and hopefulness.

In former years we have endeavoured to say a few things fitted to help students of medicine in successfully prosecuting their curriculum. We drew a parallel in 1876 betwixt their position and opportunities at that date and forty years before, showing, as we thought, that while professional knowledge had increased, and they had the advantage of examinations at successive stages of their education, instead of these being condensed in one final examination for license or a degree, they had various drawbacks unknown to their predecessors in the multiplicity of subjects considered needful, and in the more limited time at their disposal for the study of surgical or regional anatomy, and other things of primary importance. We referred to the tendency now so prevalent of trumpeting new remedies into public notice hastily and prematurely, to the disparagement and neglect of other remedies of established repute. In connexion with that, we deprecated undue attention being given by mere students and very young practitioners to periodical and ephemeral literature, while the weighty monographs and well-considered books of a past generation are virtually ignored. In 1877 the subject of medical ethics and etiquette was introduced, and some principles enforced which would enable the reader to anticipate satisfactory answers to not a few questions which are continually raised in successive numbers of the weekly journals. In the October of 1878 we stated one reason—a subordinate one, no doubt—for great earnestness and diligence in medical study, that while competitors for professional success are becoming more numerous, the average standard of preliminary education is at the same time higher than it used to be. We then showed that the healing art has an intrinsic value and importance, irrespective of all personal and selfish considerations, and that a tremendous responsibility rests on every one who aspires to it, in order that he may be so thoroughly master of it as to do his utmost for all the sufferers whom Providence may commit to his care. In most callings the deficiencies of those who follow them are felt in the long

run mainly by themselves; but in this calling—medicine and surgery—ignorance and carelessness and inefficiency involve in a special manner the vital interests of others. We then adverted to the influence which an accomplished surgeon or physician may exert, if so inclined, in promoting the highest welfare of man, both moral and religious.

We gave one or two practical suggestions on the importance of cultivating in all sorts of ways the knowing or *observing* faculties, as distinguished from those other faculties which are mainly educated and exercised in ordinary schools. The primary place due to anatomy was vindicated; the repugnance to it of some sensitive minds referred to; and this led to our remarking that "the tendency of not a few is directly the opposite, and that the human form divine is sometimes treated with an unseemly irreverence. This, however, does not imply familiarity with it in the best sense, or large attainments in scientific knowledge. The great anatomists have usually been men of sober and reverent minds." In conclusion, we returned to what we had said previously on the subject of professional reading—advising the student, as soon as he had time from other engrossing duties, to apply himself to the standard literature of his profession, particularly those monographs and books which may be regarded as so many milestones on the laborious journey leading up to our present standpoint. Our last advice was, that the student of medicine should endeavour to be well educated *all round*, and not to aim at any specialisms until he has had some reliable experience of his own qualifications. Above all, let him continue, as time and opportunity permit, to cultivate his mind by a loyal devotion to polite literature and general knowledge, so as to render himself cosmopolitan and a welcome guest in any circle of society.

We shall now offer one or two suggestions as to the mode of securing these desirable attainments and qualifications. Every one, if really in earnest, will find a way for himself; but hints may be of service. Some systematic minds have derived great advantage from keeping what may be called a "commonplace-book" or *index rerum*. When any fact or statement strikes the reader as new and important, let him straightway record it under an appropriate heading. At an early period of your studies such records will be numerous; but they will gradually, and at last rapidly, diminish in number, because it is remarkable how very few statements are really new to the man who has honestly studied a subject. But if the bare facts demanding record diminish in number, the style and mode of announcing them will attract your attention, and this especially when they assume the form of conclusions arrived at after a process of elaborate reasoning and induction. In that case, it will suffice to make a terse but distinct reference in the index, which may afterwards lead to the passage for immediate and special use. The same form of brief reference may be jotted down

when the reader wishes to be able to recall and quote correctly and fully opinions, ideas, sentiments which strike his fancy by the power, beauty, or felicitousness of their expression. The great recommendations of this mode of recording the acquisitions of systematic study seem to be, (1) that attention is quickened at the time; (2) that a habit of analysis and systematizing is formed; and (3) that memory is both strengthened and helped in laying up mental acquisitions for future and fruitful use. A man who has steadily followed this plan for some years will be able to appropriate and assimilate all that is valuable in a book with comparatively little trouble, and that trouble progressively diminishing. How many books are read which leave few, if any, impressions on the mind, because in reading them there has been no resolute endeavour to separate, in the way recommended, betwixt old and new, betwixt freshness of treatment and mere commonplace! The result is a cloud of chaff obscuring previous acquisitions, instead of an addition, however small, to the grain already garnered. A poor book is as injurious to the mental digestion as a badly-cooked dinner to the bodily. What a healthy sense of freedom is experienced when you turn from a compilation, a *multum in parvo*, with its compression and wooden fare, to the natural, the fresh, the spontaneous aliment provided by some master in the profession, who feeds his friendly readers with the mutton which he has been rearing for many years on his own green pastures!

It is hardly necessary to add, that acquisitions of knowledge obtained in the dissecting-room, in the wards of the Infirmary, or at the clinical lecture, admit of being recorded in a similar way. The shorter the record is the better, if it be precise and judiciously placed. And here we close with a suggestion formerly given, that those who have a turn that way may profitably make a record of their own dissections, when these are successful, by drawing a careful sketch of them then and there. If to a certain extent coloured, such sketches will be all the more reliable for future reference, when anatomical knowledge is beginning to lose its sharpness and precision.

INFORMATION REGARDING MEDICAL EDUCATION AND EXAMINATIONS.

THE following are the Regulations of the General Medical Council for the Registration of Medical Students:—

I.—PRELIMINARY EXAMINATIONS.

1. That no person be allowed to be registered as a Medical Student unless he shall have previously passed a Preliminary Examination in the subjects of General Education as hereinafter provided.

2. That it be delegated to the Executive Committee to prepare Annually and lay before the Council for Recognition a List of Examining Bodies, whose

Examinations fulfil the conditions of the Medical Council as regards General Education.

3. That, for the present, Testimonials of Proficiency granted by Educational Bodies, according to the subjoined list, be accepted, the Council reserving the right to add to, or take from, the list.

N.B.—A Degree in Arts of any University of the United Kingdom or of the Colonies, or of such other Universities as may be specially recognised from time to time by the Medical Council, is considered a sufficient Testimonial of Proficiency.

List of Examining Bodies whose Examinations fulfil the Conditions of the Medical Council, as regards Preliminary Education.

(1.) UNIVERSITIES OF THE UNITED KINGDOM.

Oxford.—Examination for a Degree in Arts. Responsions, Moderations, Local Examinations (Senior), Certificate to include Latin and Mathematics. Local Examinations (Junior), Certificate to include Latin and Mathematics, and also one of the following optional subjects:—Greek; French; German; Natural Philosophy, including Mechanics, Hydrostatics, and Pneumatics.

Cambridge.—Examination for a Degree in Arts. Previous Examination. Local Examinations (Senior), Certificate to include Latin and Mathematics. Local Examinations (Junior), Certificate to include Latin and Mathematics, and also one of the following optional subjects:—Greek; French; German; Natural Philosophy, including Mechanics, Hydrostatics, and Pneumatics. Higher Local Examinations.

Durham.—Examination for a Degree in Arts. Examination for Students in their second and first years. Registration Examination for Medical Students. Local Examinations (Senior), Certificate to include Latin and Mathematics. Local Examinations (Junior), Certificate to include Latin and Mathematics, and also one of the following optional subjects:—Greek; French; German; Natural Philosophy, including Mechanics, Hydrostatics, and Pneumatics.

Oxford and Cambridge Schools' Examination Board.—¹Certificate to include English Language, including Grammar and Composition; Arithmetic, including Vulgar and Decimal Fractions; Algebra, including Simple Equations; Geometry, First two books of Euclid; Latin, including Translation and Grammar; and one of the following optional subjects:—Greek, French, German, Natural Philosophy, including Mechanics, Hydrostatics, and Pneumatics.

London.—Examination for a Degree in Arts. Matriculation Examination.

Aberdeen, Edinburgh, Glasgow, and St Andrews.—Examination for a Degree in Arts. Preliminary Examination for Graduation in Medicine or Surgery.

Edinburgh, Aberdeen, and St Andrews.—Examination of (Senior) Candidates for Honorary Certificates under the Local Examinations of these Universities.

Dublin.—Examination for a Degree in Arts. Entrance Examination.

Queen's University (Ireland).—Examination for a Degree in Arts. Entrance Examination. Examination for the Diploma of Licentiate in Arts. Previous Examination for B.A. Degree. Local Examinations, including all the subjects required.

(2.) OTHER BODIES NAMED IN SCHEDULE (A) TO THE MEDICAL ACT.

Royal College of Surgeons of England.—Examination conducted under the Superintendence of the College of Surgeons, by the Board of Examiners of the Royal College of Preceptors.

The Society of Apothecaries of London.—Examination in Arts.

¹ The *English* is provided for by the following *Resolution* of the Executive Committee, passed 27th October 1876:—

"That, as every Candidate for the Certificate of the Oxford and Cambridge Schools' examination Board is required to answer questions in such a manner as to satisfy the Examiners that he has an adequate knowledge of English Grammar and Orthography, this shall be held as conforming to the requirements of the Medical Council in reference to English Language."

Royal Colleges of Physicians and Surgeons, Edinburgh.—Preliminary Examination in General Education, conducted by a Board appointed by these two Colleges combined.

Faculty of Physicians and Surgeons of Glasgow.—Preliminary Examination in General Literature.

Royal College of Surgeons in Ireland.—Preliminary Examination, Certificate to include all the subjects required.

Apothecaries' Hall of Ireland.—Preliminary Examination in General Education.

(3.) EXAMINING BODIES IN THE UNITED KINGDOM NOT INCLUDED IN SCHEDULE (A) TO THE MEDICAL ACT.

Royal College of Preceptors.—Examination for a First Class Certificate.

The Examiners for Commissions and Appointments in Her Majesty's Service, Military, Naval, and Civil.—Certificate to include all the subjects required by the General Medical Council.

(4.) INDIAN, COLONIAL, AND FOREIGN UNIVERSITIES AND COLLEGES.

Universities of Calcutta, Madras, and Bombay.—Entrance Examination, Certificate to include Latin.

M'Gill College, and Bishop's College, Montreal.—Matriculation Examination.

University of Toronto, Trinity College, Toronto, Queen's College, Kingston, and Victoria College, Upper Canada.—Matriculation Examination.

King's College, Nova Scotia.—Matriculation Examination. Responsions.

Medical College, Halifax, Nova Scotia.—Matriculation Examination.

University of Fredericton, New Brunswick.—Matriculation Examination.

University of Melbourne.—Matriculation Examination, Certificate to include all the subjects required by the General Medical Council.

University of Sydney.—Matriculation Examination.

University of the Cape of Good Hope.—Matriculation Examination.

University of Adelaide.—Matriculation Examination. Primary Examination.

Codrington College, Barbadoes.—1. English Certificate for Students of two years' standing, specifying the subjects of Examination. 2. Latin Certificate, or "Testamur."

Tasmanian Council of Education.—Examination for the Degree of Associate of Arts, Certificate to include Latin and Mathematics.

Christ's College, Canterbury, New Zealand.—Voluntary Examinations, Certificate to include all the subjects required by the General Medical Council.

South Australia.—*South Australian Institute, Adelaide.*—Preliminary General Examination: First Class Certificate.

4. That it be recommended to the Licensing Boards not to accept the Certificate of Proficiency in General (preliminary) Education from any of the Bodies, the names of which are contained in the list annually circulated, unless such Certificate testify that the Student to whom it has been granted has been examined in the following subjects:—1. English Language, including Grammar and Composition.¹ 2. Arithmetic, including Vulgar and Decimal Fractions. Algebra, including Simple Equations. 3. Geometry—First two books of Euclid, or the subjects thereof. 4. Latin, including Translation and Grammar.

And in one of the following optional subjects:—Greek. French. German. Elementary Mechanics of solids and fluids, meaning thereby Mechanics, Hydrostatics, Pneumatics, and Hydraulics.

¹ The General Medical Council will not consider any Examination in English sufficient that does not fully test the ability of the candidate,—1st, To write a few sentences in correct English on a given theme, attention being paid to spelling and punctuation as well as to composition. 2d, To write a portion of an English author to dictation. 3d, To explain the grammatical construction of one or two sentences. 4th, To point out the grammatical errors in a sentence ungrammatically composed, and to explain their nature. 5th, To give the derivation and definition of a few English words in common use.

Provided always, that an Examination may be accepted as satisfactory that secures, on the part of the Candidate passing it, a sufficient grammatical knowledge of English.

II.—REGISTRATION OF MEDICAL STUDENTS.

7. Every Medical Student shall be registered in the manner hereinafter prescribed by the General Medical Council.

8. No Medical Student shall be registered until he has passed a Preliminary Examination, as required by the General Medical Council, and has produced evidence that he has commenced Medical Study.

9. The commencement of the course of Professional Study recognised by any of the Qualifying Bodies, shall not be reckoned as dating earlier than fifteen days before the date of Registration.

10. The Registration of Medical Students shall be placed under the charge of the Branch Registrars.

11. Each of the Branch Registrars shall keep a Register of Medical Students according to the subjoined Form:—

Form for the Registration of Medical Students.

Date of Registration.	NAME.	Preliminary Examination and Date.	Place and Date of Commencement of Medical Study, as certified by a Master, Teacher, or Official in a Medical School or Hospital.

12. Every person desirous of being registered as a Medical Student shall apply to the Branch Registrar of the division of the United Kingdom in which he is residing, according to the annexed Form, which may be had on application to the several Qualifying Bodies, Medical Schools, and Hospitals; and shall produce or forward to the Branch Registrar a Certificate of his having passed a Preliminary Examination, as required by the General Medical Council, and evidence that he has commenced Medical Study.

The following pages contain a tabular abstract of the regulations of the various Licensing Boards, as well as a list of the Hospitals, Dispensaries, etc., attached to our Scotch Medical Schools; also the regulations for the Army, Indian, and Navy Medical Services. The space at our disposal does not allow of more detailed information. But, in point of fact, the regulations of all Licensing Boards now correspond much more closely than they used to do, and the regulations of the General Medical Council afford a key to the general requirements of all of them. For special information, application should always be made to the Secretaries of the Licensing Boards; or, in the case of the Universities, recourse may be had to the published Calendars.

The *Preliminary Examinations* are usually held before the commencement, and at the end, of the Winter Session,—viz., in October, March, or April—sometimes also at the end of the Summer Session. The Professional Examinations in Universities are usually after the Winter and during the Summer Sessions; in Edinburgh, however, the first Professional is held in October as well as April. The other Licensing Boards' examinations are held at various periods throughout the year. Special examinations, under circumstances of urgency, can be held at almost any time; but they, of course, entail considerable addition to the expense.

COURSE OF STUDY REQUIRED BY THE VARIOUS BOARDS OF THE UNITED KINGDOM.

	Age.	Anatomy.	Dissections.	Chemistry.	Practical Chemistry.	Materia Medica.	Physiology or Institutes of Medicine.	Surgery.	Practice of Medicine.	Midwifery.	Medical Jurisprudence.	Pathology or Morbid Anatomy.	Botany.	Natural History.	Practical Pharmacy.	Clinical Surgery.	Clinical Medicine.	Hospital Attendance.	Practical Midwifery.	Dispensary or Out-door Practice.	Vaccination.
	Years.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.
Edinburgh University, M.B. & C.M., . . .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	8 mos. or 6 cas.	6	
University of Glasgow, M.B. & C.M., . . .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	do.	6	
University of Aberdeen, M.B. & C.M., . . .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	do.	6	
University of St. Andrews, M.B. & C.M., . . .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	do.	6	
London University, M.B., . . .	21	6	12	6	1 cts	1 cts	6	6	6	1 cts	1 cts	1 cts	3	3	1 cts	2 yrs.	2 yrs.	4 yrs.	20 cas.	6	
University of Durham, M.B. & M.D., . . .	21																				
Dublin University, M.B., . . .	21	6	6	6	3	3	3	6	6	6	3	3	3					24	6 mo.		
"Surgical Diploma, . . .	12	18	6	3	3	6	18	12	6	6	3	3	3	3		27	27	24	6 mo.		
The Queen's University of Ireland, M.D., . . .	12	12	6	3	3	6	12	6	6	6	3	3	3	3	3 mos.	12	12	24	3 mo.		
Royal College of Physicians, London, . . .	21	12	12	6	3	3	12	6	12	3	3	3	3	3	3	3	9	24	20 cas.		
Royal College of Physicians, Edinburgh, . . .	21	6	6	6	3	3	6	6	6	6	3	3	3	3	3	3	6	24	6 cases		
King and Queen's Col. of Phys. Ireland, . . .	21	6	12	6	6	6	12*	6	6	6	6	3	6	21	3	6	21	27	6 mo.		
Royal College of Surgeons, London, . . .	21	12	12	6	6	3	18	18	6	3	3	3	3	27*	3	27*	9*	33	6 mo.		Cert.
Royal College of Surgeons, Dublin, . . .	21	18	18	6	6	3	18	18	6	3	3	3	3	18	3	18	9	27	6 cas.		Cert.
Royal College of Surgeons, Edinburgh, . . .	21	12	12	6	3	3	3	6 or 12	6	3	3	3	3	6 or 12	3	6 or 12	6	24	6 cas.		Cert.
Faculty of Phys. and Surgeons, Glasgow, . . .	21	12	12	6	3	3	3	6 or 12	6	3	3	3	3	6 or 12	3	6 or 12	6	24	6 cas.		Cert.
For Double Qualification by Royal Col- lege of Phys. and Surg. of Edinburgh, . . .	21	12	12	6	3	3	3	6 or 12	6 or 12	3	3	3	3	6 or 12	3	6 or 12	6 or 12	24	6 cas.		Cert.
For Double Qualification by Royal Col- lege Phys. Edinburgh, and Faculty of Physicians and Surgeons of Glasgow, . . .	21	12	12	6	3	3	6	6 or 12	6	3	3	3	3	6 or 12	3	6 or 12	12	24	6 cas.		
Apothecaries' Hall, England, . . .	21	12	6	6	3	3	6	6	12	3	3	6	3	Appr.	Appr.	9	27	27	20 cas.		9 mo.
"Ireland, . . .	21	6	12	6	3	3	6	6	6	6	3	6	3				18	27	20 cas.		

ENGLISH POOR-LAW BOARD.—Candidates for the appointment of Medical Officer are required to be registered under the Medical Act, and must be legally qualified to practise both Medicine and Surgery, in virtue of Diplomas or Licenses granted by competent legal authority in England, Scotland, or Ireland.

Information respecting exceptions to these regulations under various circumstances, and other details as to the order in which, according to some Licensing Bodies, the courses should be taken out, etc., must be obtained by consulting the published Charts of the Colleges, etc. Students should apply to the Secretary to each Board which they intend to pass for a detailed copy of its Regulations.

* Students from the Schools of Scotland are admitted to examination at the Royal College of Surgeons of England, if they have followed the course of study required by the regulations of the Royal College of Surgeons of Edinburgh. Students in Scotland, therefore, are not required to attend more than one course of Physiology, six months Clinical Surgery, six months Clinical Medicine, and twenty-four months hospital.

MEDICAL SCHOOLS OF SCOTLAND, 1879-80.

WINTER SESSION.

SUBJECTS.	UNIVERSITY OF EDINBURGH.	SCHOOL OF MEDICINE, EDINBURGH.	UNIVERSITY OF GLASGOW.	ANDERSON'S COLLEGE, GLASGOW.	GLASGOW ROYAL INFIRMARY SCHOOL OF MEDICINE.	UNIVERSITY OF ABERDEEN.	UNIVERSITY OF ST ANDREWS.
Anatomy, Systematic and Practical, with Demonstrations.	Professor Turner.	Dr Handy-side † and Mr J. Symington.	Professor Cleland.	Dr A. M. Buchanan.	Mr H. E. Clark.	Professor Struthers.	...
Physiology, or Institutes of Medicine.*	Professor Rutherford.	Dr James.	Professor M'Kendrick.	Dr C. M'Vail.	Mr W. J. Fleming.	Professor Stirling.	Professor Pettigrew.
Chemistry, and Practical Chemistry.	Professor C. Brown.	Dr Macadam, Mr King, † Mr I. Macadam, Dr Drinkwater, and Mr J. Y. Buchanan.	Professor J. Ferguson.	Professor Dittmar.	Dr John Clark.	Professor Brazier.	Professor Heddle.
Materia Medica and Therapeutics.	Professor Fraser.	Dr Moinet † and Dr Wm. Craig.	Professor Cowan.	Dr Morton.	Dr John Dougall.	Professor Davidson.	...
Practice of Medicine.	Professor Grainger Stewart.	Drs Muirhead † and Wyllie.	Professor Gairdner.	Dr M. Charteris.	Dr A. Wood Smith.	Prof. Smith-Shand.	...
Surgery.	Professor Spence.	Dr Watson, † Mr Chiene, Dr John Duncan, Dr Miller.	Professor Macleod.	Dr Dunlop.	Dr H. C. Cameron.	Professor Pirrie.	...
Midwifery.	Professor Simpson.	Drs Angus Macdonald, H. Croom, and C. Bell. †	Professor Leishman.	In Summer.	In Summer.	Professor Stephenson.	...
Natural Philosophy.	Professor Tait.	...	Professor Sir Wm. Thomson.	Prof. Forbes.	...	Professor Thomson.	Professor Swan.
Natural History.	Professor Sir Wyville Thomson.	Dr A. Wilson.	Professor Young.	...	...	Professor J. Cossar Ewart.	Professor Nicholson.
General Pathology.	Professor Sanders.	Dr B. C. Waller.	Dr Joseph Coats.	At Royal or Western Infirmary.	Dr Foulis.	Dr Rodger.	...
Clinical Medicine.	Professors Maclagan, Sanders, G. Stewart, and T. R. Fraser.	Drs Balfour, † Muirhead, and Brakenridge.	Prof. M'Call Anderson & Physicians of Western Infirmary.	The Physicians of the Royal Infirmary.		Drs Smith-Shand, Beveridge, and Fraser.	...
Clinical Surgery.	Professor Annandale.	Mr Joseph Bell.	Prof. George Buchanan & Surgeons of Western Infirmary.	The Surgeons of the Royal Infirmary.		Drs Pirrie, Ogston, and O. Will.	...

Lectures on the Diseases of the Ear are given in Edinburgh during the Winter Session by Dr Kirk Duncanson.

* This course is equivalent to that given under the name of General Anatomy and Physiology in the English Schools. Special schedules are issued by the London Boards for their Scotch students, which should always be inquired for.

† These are not conjoint courses, but separate ones by the gentlemen named.

‡ This is a joint course.

MEDICAL SCHOOLS OF SCOTLAND, 1880.

SUMMER SESSION.

SUBJECTS.	UNIVERSITY OF EDINBURGH.	SCHOOL OF MEDICINE, EDINBURGH.	UNIVERSITY OF GLASGOW.	ANDERSON'S COLLEGE, GLASGOW.	GLASGOW ROYAL INFIRMARY SCHOOL OF MEDICINE.	UNIVERSITY OF ABERDEEN.
Practical Anatomy and Demonstrations.	Professor Turner.	Dr Handyside* and Mr J. Symington.	Professor Cleland.	Dr A. M. Buchanan.	Mr H.E. Clark.	Professor Struthers.
Botany.	Professor Dickson.	...	Professor J. Bayley Balfour.	Prof. Wilson.	...	Professor J. W. H. Trail.
Materia Medica.	Professor Fraser.	Drs Moinet* and Craig.	Professor Cowan and Dr Tennant.	Dr Morton and Dr Pollock.	...	...
Midwifery.	Professor Simpson.	Drs Keiller,* Underhill, Croom, and Charles Bell.	...	Dr J.G. Wilson.	Dr James Stirton.	Professor W. Stephenson.
Medical Jurisprudence.	Professor MacLagan.†	Dr Littlejohn† and Mr H. A. Husband.*	Professor Simpson.	Dr Alexander Lindsay.	Dr William Macewen.	Professor Ogston.‡
Comparative Anatomy.	Professor Turner.	Dr Handyside.	...	...	...	Professor J. Cossar Ewart.
Practical Physiology, including Histology.	Professor Rutherford.	Dr James.	Professor M'Kendrick.	Dr M'Vail.	Mr W. J. Fleming.	Professor Stirling.
Practical Pathology, including Histology.	Professor Sanders.	...	Dr Joseph Coats	Dr Foulis, at Royal Infirmary.	Dr D. Foulis.	Dr Rodger.
Practical Chemistry.	Professor Crum Brown.	Dr Macadam, Mr King, Mr I. Macadam, Dr Drinkwater, and Mr J. Y. Buchanan.*	Professor J. Ferguson.	Professor Dittmar.	Dr John Clark.	Prof Brazier.
Operative Surgery.	Professor Spence.	Dr Watson,* Mr Chiene, Dr J. Duncan, Dr A.G. Miller.	Professor Macleod.	Dr Dunlop.	Dr H. C. Cameron.	...
Pathology.	Professor Sanders.	Dr B. C. Waller.	...	Dr Foulis, at Royal Infirmary.	Dr D. Foulis.	...
Mental Diseases.	Dr Clouston.	...	...	...	Dr Alex. Robertson.	...
Natural History.	Professor Sir Wyville Thomson.	Dr A. Wilson.	Professor Young.	...	...	Professor J. Cossar Ewart.
Clinical Medicine.	Professors Sanders, G. Stewart, and T. R. Fraser.	Drs Balfour,† Muirhead, and Brakenridge.	Prof. M'Call Anderson and Physicians of W. Infirmary.	The Physicians of the Royal Infirmary.		Drs Smith-Shand, Beveridge, and Fraser.
Clinical Surgery.	Professor Annandale.	Mr Joseph Bell.	Prof. George Buchanan and Surgeons of W. Infirmary.	The Surgeons of the Royal Infirmary.		Drs Pirrie, Ogston, and O. Will.

Operative Surgery is taught during the Summer in Edinburgh by Messrs Bell and Chiene and Drs Duncan and Miller, and in Glasgow by Professor Macleod. Instruction in Vaccination is also given at the Royal Public Dispensary, Edinburgh, on Wednesdays and Saturdays at 12, both Summer and Winter, by Dr Husband; at the Faculty Hall, Glasgow, on Mondays at 12, by Dr Thomson; and at the Royal Infirmary, Glasgow, on Mondays and Thursdays at 12 o'clock, by Dr Tannahill, and Dr M'Vail, at Western Infirmary, on Mondays at 1 p.m. Medical Psychology and Insanity are taught in Summer by Dr Clouston and Dr J. B. Tuke in Edinburgh, and in Glasgow by Dr Yellowlees and Dr Robertson; the Diseases of Children by Drs Andrew, Dunsmure, and Carmichael; the Diseases of the Eye by Dr Argyll Robertson in Edinburgh, Professor A. Dyce Davidson in Aberdeen, and by Dr Thomas Reid, Mr Clark, and Dr Wolfe in Glasgow; the Diseases of the Ear by Dr Kirk Duncanson in Edinburgh, and by Dr J. P. Cassells in Glasgow; and Dental Surgery by Dr J. C. Woodburn in Glasgow, and Mr Williamson in Aberdeen.

* These are not conjoint courses, but separate ones by the gentlemen named.

† Dr Ogston delivers his courses only in Winter. Dr Littlejohn and Mr H. A. Husband give courses during both the Winter and Summer Sessions. Dr MacLagan also lectures during both Summer and Winter. The Winter Course is chiefly intended for law students, but is open to medical students also.

‡ This is a joint course.

*** For additional Summer Courses on special subjects, see the Prospectus of each School.

LIST OF HOSPITALS, DISPENSARIES, ETC., IN CONNEXION
WITH THE MEDICAL SCHOOLS OF SCOTLAND.

EDINBURGH.

ROYAL INFIRMARY, including LOCK HOSPITAL. Upwards of 560 Beds. Visits daily from 12 till 2 P.M. Physicians—Drs Maclagan, Sanders, and Grainger Stewart, Professors of Clinical Medicine; Professor Simpson and Dr Angus Macdonald (for Diseases of Women); Drs G. W. Balfour, Claud Muirhead, and D. J. Brakenridge, Clinical Lecturers. Assistant Physicians—Drs John Wyllie and James Affleck. Consulting Physicians—Dr D. R. Haldane; Dr Alex. Keiller (for Diseases of Women). Pathologist, Dr D. J. Hamilton.

Surgeons—Professors Spence and Annandale, Mr Joseph Bell, Dr John Duncan, and Mr Chiene. Extra Surgeons, Dr P. H. Watson; Dr Thomas Keith (for Ovarian Diseases). Assistant Surgeons, Drs A. G. Miller, P. H. Maclaren, and John Bishop. Consulting Surgeons, Dr Dunsmure and Dr Gillespie. Ophthalmic Surgeons, Mr Walker and Dr Argyll Robertson. Dental Surgeon, Dr John Smith.

CONVALESCENT HOUSE, Corstorphine. Acting Surgeon, Dr P. H. Maclaren.

CHALMERS HOSPITAL FOR THE SICK AND HURT. 24 Beds for medical and surgical patients. Physician, Dr Halliday Douglas. Surgeon, Dr P. H. Watson.

ROYAL MATERNITY AND SIMPSON MEMORIAL HOSPITAL. 30 Beds; about 250 in-patients and 350 out-patients yearly. Consulting Physicians, Drs Moir and Graham Weir. Physicians, Dr Keiller, Professor Simpson, Drs Halliday Croom and Angus Macdonald. Consulting Surgeon, Dr Dunsmure.

ROYAL HOSPITAL FOR SICK CHILDREN. 60 Beds; average number of out-patients, about 5600. Consulting Physicians, Sir Robert Christison, Dr C. Wilson, and Dr Graham Weir. Consulting Surgeon, Professor Spence. Physicians, Drs J. Linton, J. Dunsmure, jun., J. Andrew, and C. E. Underhill. Extra Physicians, Drs Blair Cunynghame and Carmichael. Surgeon-Dentist, Dr Smith. Pathologist, Professor Sanders. Ophthalmic Surgeon, Dr Argyll Robertson.

ROYAL PUBLIC DISPENSARY AND VACCINE INSTITUTION. About 12,700 patients annually. Medical Officers, Professors Sanders and Spence, Drs Linton, Husband, Andrew, D. Wilson, Moinet, Alexander Sinclair, Allan, Jamieson, Cotterill, and Miller. Physician-Accoucheurs, Drs Keiller and Andrew. Superintendent of Vaccination, Dr Husband. Medical Secretary, Dr Andrew. Clinique daily at 2 P.M. Vaccination on Wednesdays and Saturdays at 12 noon. Apothecary, Mr John Nicol.

NEW TOWN DISPENSARY. About 10,000 patients annually. Medical Officers, Drs Cunynghame, Affleck, Cadell, Dunsmure, Wyllie, Carmichael, Ritchie, Tuke, Playfair, Montgomerie Bell, and James. Physician-Accoucheurs, Drs Dunsmure, jun., and Underhill. Superintendent of Vaccination, Dr Affleck. Clinique daily at 2 P.M. Vaccination on Tuesdays and Fridays from 12 to 1.

ROYAL ASYLUM FOR THE INSANE. About 660 patients. Physician, Dr Clouston.

EYE INFIRMARY, 6 Cambridge Street, Lothian Road. Surgeons, Benjamin Bell, Esq., F.R.C.S., and Joseph Bell, F.R.C.S. Assistant Surgeon, Dr J. Kirk Duncanson. Open daily at 1 P.M. Average number of patients annually, 900.

EYE DISPENSARY, 54 Cockburn Street. About 2000 patients annually. Surgeons, Mr Walker, Dr Wilson, and Dr Argyll Robertson. Open Mondays, Wednesdays, and Fridays, at 1 P.M. Clinical instruction during the summer session.

EAR DISPENSARY OF EDINBURGH, 17 Thistle Street. Drs T. Keith and Blair Cunynghame, and Mr Chiene. Open Tuesdays at 11.

EAR DISPENSARY, 6 Cambridge Street, Lothian Road. Surgeon, Dr J. Kirk Duncanson. Open Mondays and Thursdays, from 12 to 1 o'clock.

DENTAL DISPENSARY, 38 Cockburn Street. Consulting Surgeon, Professor Spence. Consulting Physician, Dr Sanders. Dental Surgeons, Dr Roberts, Messrs Knox Chisholm, Swanson, W. Chisholm, A. Cormack, and John Wight. Daily, 9 to 10 A.M. Average number of patients, 4000 per annum.

GLASGOW.

ROYAL INFIRMARY. 570 Beds. Visits daily at 9 A.M. Physicians, Drs Maclaren, Scott Orr, Wood Smith, Perry, and Charteris.

Surgeons, Drs Cameron, Morton, Watson, Macewen, and Dunlop. Gynaecologist, Dr Stirton. Aural Surgeon, Dr Cassells. Dental Surgeon, Dr Woodburn. Dispensary Physicians, Drs Mather and Lawrie. Extra Dispensary Physicians, Drs J. W. Anderson, John Weir, and John Dougall. Dispensary Surgeons, Mr Clark and Dr Lothian. Extra Dispensary Surgeons, Dr Whitson, W. J. Fleming, M.B., and Dr Foulis. Vaccinator, Robert Tannahill, M.D. M. Thomas, M.D., Superintendent.

WESTERN INFIRMARY. This Hospital contains 200 Beds for Medical and Surgical patients, with Wards for Skin Diseases and Diseases of Women, and out-door Midwifery department. Physicians, W. T. Gairdner, M.D., T. McCall Anderson, M.D., James Finlayson, M.D. Diseases of Women, W. Leishman, M.D. Surgeons, George H. B. Macleod, M.D., George Buchanan, M.D., A. Patterson, M.D. Out-door Physicians-Accoucheur, Robert Kirk, M.D., W. L. Reid, M.D. Dispensary Physicians, Gavin P. Tennent, M.D., Joseph Coats, M.D., D. C. McVail, M.B. Dispensary Surgeons, James G. Lyon, M.D., D. N. Knox, M.B., James Christie, M.D. Extra Dispensary Physician, S. Gemmell, M.B. Extra Dispensary Surgeon, J. C. Renton, M.B. Pathologist, Joseph Coats, M.D. Dispensary Surgeon for Diseases of the Ear, Thomas Barr, M.D. Medical Superintendent, John Alexander, M.D. Lady Superintendent, Miss E. Clyde.

The hour of visit is 9 A.M. Operating days, Wednesday and Saturday. The Dispensary for out-patients is open daily at 2 P.M.

LOCK HOSPITAL. 81 Beds. Medical Officers, Drs James Dunlop and A. Patterson. In-patients, 456.

LYING-IN HOSPITAL AND DISPENSARY. 24 Beds; in-patients, 293; out-patients, 937. Consulting Surgeon, Dr George Buchanan. Consulting Physician, Dr J. G. Wilson. Physicians-Accoucheur, Drs R. D. Tannahill and Hugh Miller. Assistant Physicians-Accoucheur, Drs Samuel Sloan and J. W. Anderson. Out-door Physicians, Drs R. T. Paton, R. S. Wallace, W. L. Reid, Alexander Miller, and W. J. Brock.

ROYAL ASYLUM FOR THE INSANE. About 550 patients. Physician-Superintendent, Dr David Yellowlees. Lectures on Mental Diseases during summer, alternately at the University and the Asylum.

EYE INFIRMARY. 75 Beds; 508 in-patients; 5032 out-patients annually. Consulting Surgeon, George Buchanan, M.D. Surgeons, Thomas Reid, M.D., and Thomas S. Meighan, M.D. Assistant Surgeons, Henry E. Clark, M.R.C.S., J. Crawford Renton, M.B., D. N. Knox, M.B.

DISPENSARY FOR SKIN DISEASES, 63 John Street. Physician, Professor McCall Anderson. Open Mondays and Thursdays at 4 P.M., for out-door patients. This Institution is in connexion with the Wards for Skin Diseases in the Western Infirmary, to which the more important cases are sent.

OPHTHALMIC INSTITUTION. Consulting Physician, Dr J. S. Cumming. Surgeon, Dr J. R. Wolfe. Acting Physician, Dr Robt. Bell. Assistant-Surgeons, Wm. Pickering, M.B., and N. M. Cluckie. Open daily from 1 to 3 P.M. A Course of Lectures and Clinical Instruction during the winter and summer months.

GLASGOW DISPENSARY FOR DISEASES OF THE EAR, 241 Buchanan Street. During the Summer Session a Course of Practical Instruction in the Treatment of Ear Disease is given to the Students attending the Clinique. Average number of cases treated, 800 annually. Surgeon, James Patterson Cassells, M.D., M.R.C.S. Lond.

The **HUNTERIAN MUSEUM** is open to Students of Medicine, for purposes of study, on presenting their matriculation tickets.

ABERDEEN.

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ARMY MEDICAL DEPARTMENT.

6 WHITEHALL YARD, S.W.

SCHEDULE OF QUALIFICATIONS NECESSARY FOR CANDIDATES DESIROUS OF OBTAINING COMMISSIONS IN THE ARMY MEDICAL DEPARTMENT, WITH EXTRACTS FROM THE REGULATIONS PRESCRIBED BY THE ROYAL WARRANT OF THE 28TH APRIL 1876 (CLAUSE 58, ARMY CIRCULARS, 1876), BY WHICH THE PAY, PROMOTION, AND RETIREMENT OF MEDICAL OFFICERS ARE REGULATED AND DETERMINED.

1. Every candidate desirous of presenting himself to compete for a commission in the Army Medical Department must be 21 years of age and not over 32 years at the date of commencement of the competitive examination. He must produce an extract from the Register of his birth, or, in default, a declaration, made before a magistrate by one of his parents or guardians, giving his exact age. He must also produce a recommendation from some person of standing in society—not a member of his own family—to the effect that he is of regular and steady habits, and likely in *every* respect to prove creditable to the Department if a commission be granted; and also a certificate of moral character from the parochial clergyman, if possible.

2. The candidate must sign a declaration upon honour that both his parents are of unmixed European blood, and that he labours under no mental or constitutional disease, nor has any hereditary tendency thereto, nor any imperfection or disability that can interfere with the efficient discharge of the duties of a medical officer in any climate: also that he does not hold, and has never held, any commission or appointment in the public services. His physical fitness will be determined by a Board of Medical Officers, who are required to certify that the candidate's vision is sufficiently good to enable him to perform any surgical operation without the aid of glasses. A moderate degree of myopia will not be considered a disqualification, provided it does not necessitate the use of glasses during the performance of operations, and that no organic disease of the eyes exists. The Board must also certify that he is free from organic or other disease, and from constitutional weakness, or tendency thereto, or other disability of any kind likely to unfit him for military service in any climate.

3. Certificates of age, registration of diplomas, etc., and of character, must accompany the declaration when signed and returned.

4. Candidates will be examined by the Examining Board in the following compulsory subjects, and the highest number of marks attainable will be distributed as follows:—*a*. Anatomy and Physiology, 1000; *b*. Surgery, 1000;

c. Medicine, including Therapeutics, the Diseases of Women and Children, 1000; d. Chemistry and Pharmacy, and a practical knowledge of drugs, 100. [N.B.—The examination in Medicine and Surgery will be in part practical, and will include operations on the dead body, the application of surgical apparatus, and the examination of Medical and Surgical patients at the bedside.] The eligibility of each candidate for the Army Medical Service will be determined by the result of the examinations in these subjects only. Examinations will also be held in the following voluntary subjects, for which the maximum number of marks will be—French and German (150 each), 300; Natural Sciences, 300. The knowledge of Modern Languages being considered of great importance, all intending competitors are urged to qualify in French and German. The Natural Sciences will include Comparative Anatomy, Zoology, Natural Philosophy, Physical Geography, and Botany, with special reference to *Materia Medica*. The number of marks gained in both the voluntary subjects will be added to the total number of marks obtained by those who shall have been found qualified for admission, and whose position on the list of successful competitors will thus be improved in proportion to their knowledge of modern languages and natural sciences.

5. After passing this examination, every candidate will be required to attend one entire course of practical instruction at the Army Medical School on—(1) Hygiene; (2) Clinical and Military Medicine; (3) Clinical and Military Surgery; (4) Pathology of Diseases and Injuries incident to Military Service.

The following Extracts from the Royal Warrant of 28th April 1876 (Clause 58 Army Circulars, 1876) are republished for the information of Candidates for Commissions in the Army Medical Department.

1. The daily rates of pay of the officers of the Army Medical Department shall be as follows:—Surgeon-General £2, after twenty-five years' service £2, 5s., after thirty years' service £2, 7s., after thirty-five years' service £2, 10s.; Deputy Surgeon-General £1, 10s., after twenty-five years' service £1, 12s., after thirty years' service £1, 15s., after thirty-five years' service £1, 17s.; Surgeon-Major, on appointment £1, after five years' service as such £1, 5s.; Surgeon, on appointment £250 a year, after ten years' service 17s 6d. daily. Charge pay: the principal medical officer of an army in the field, consisting of 10,000 men and upwards, £1 daily; of 5000 men and upwards, 15s. daily; of less than 5000, 10s. daily. Or, the principal medical officer of a colony where the number of commissioned officers and enlisted men is 1500 and upwards, 5s. daily.

2. The pay of officers shall be issued monthly in arrear.

3. The relative rank of the officers of the Army Medical Department shall be as follows:—I. A Surgeon-General shall rank as Major-General, according to the date of his commission. II. A Deputy Surgeon-General shall rank as Colonel, according to the date of his commission. III. A Surgeon-Major shall rank as Major, according to the date of his commission; after twenty years' full-pay service as Surgeon and Surgeon-Major, he shall rank as Lieutenant-Colonel, but junior of the latter rank. IV. A Surgeon shall rank as Lieutenant, according to the date of his commission; and, after six years' full-pay service, as Captain according to the date of the completion of such service.

4. The relative rank of these officers shall regulate choice of quarters, rates of lodging-money, servants, fuel and light, or allowances in their stead, detention and prize-money, as well as allowances granted on account of wounds or injuries received in action, and pensions and allowances to widows and families.

5. Forage shall be granted to officers of the Army Medical Department for such number of horses as are necessarily kept by them for duty.

6. Admission to the Army Medical Department shall be by public competition.

7. Every candidate for appointment to the Army Medical Department shall possess two Diplomas or Licenses, one to practise Medicine and the other Surgery in Great Britain or Ireland, and be registered under the Medical Act in force at the time of his appointment

8. A successful candidate, who, having passed through a course of instruction at the Army Medical School at Netley, in Military Medicine, Surgery, Hygiene, and Pathology, shall have proved, after examination, that he possesses a competent knowledge of those subjects, shall receive a commission as Surgeon for a limited period of ten years' service on full pay. From the date of joining at Netley, and up to that of passing his final examination, a candidate shall receive 5s. a day.

9. On the completion of ten years' commissioned service, unless the Surgeon be specially selected for further employment in the Medical Department of our Army, or, if he be unwilling to continue to serve therein, his services shall be dispensed with, and he shall be entitled to receive, in lieu of all pension or retirement, pension for wounds excepted, the sum of one thousand pounds.

10. A Surgeon of less than ten years' service, disqualified for duty by ill-health, certified by a Board of Medical Officers to have been contracted in and by the Service, may, at the discretion of our Secretary of State for War, be granted half-pay at a rate not exceeding 8s. a day if he have served five years or more, or 6s. a day if he have served less than five years, for a period not exceeding six months at one time.

11. At the expiration of that period of six months, if the Surgeon be able to resume his duties, he shall be entitled to complete his term of ten years' service. If he be unable to resume duty, as certified by a Board of Medical Officers, he shall be allowed, if he have not served five years, a further period of six months, without half-pay; at the expiration of which period, if still unable to resume duty, his services shall be dispensed with.

12. If the Surgeon have served five years on full pay, and be unable to resume duty as certified by a Board of Medical Officers, his services shall be dispensed with, and he shall be entitled to receive, in lieu of all further pension or pay, pension for wounds excepted, a gratuity at one of the following rates, viz. :—If he shall have completed nine years' full-pay service, £800; if he shall have completed eight years' full-pay service, £700; if he shall have completed seven years' full-pay service, £600; if he shall have completed six years' full-pay service, £500; if he shall have completed five years' full-pay service, £400.

13. If a Surgeon be unable to complete his ten years' service from any cause other than wounds or ill-health, certified by a Board of Medical Officers to have been caused in and by the Service, or reduction of establishment, he shall be allowed not more than six months' leave without pay, after which, if unable to resume duty, his services shall be at once dispensed with, and he shall have no further claim on the Department.

14. If the services of an Officer be temporarily dispensed with in consequence of a reduction of establishment, he shall be granted the rates of half-pay fixed by Article 10 until there be an opportunity of re-employing him, or, if he have served five years, he may retire from the Service with a gratuity according to the rates specified in Article 12.

15. Every year it shall be competent for our Commander-in-Chief, on the recommendation of the Director-General of the Army Medical Department, to select, with the approval of our Secretary of State, a number of Surgeons not exceeding six, who shall be retained in the Service, and shall be promoted after twelve years' service on full-pay to the rank of Surgeon-Major.

16. All promotion from the rank of Surgeon-Major to that of Deputy Surgeon-General, and from the rank of Deputy Surgeon-General to that of Surgeon-General, shall be given for ability and merit upon the selection of our Commander-in-Chief, with the approval of our Secretary of State; and the grounds of such selection shall be stated to us in writing, and recorded in the Department. In all such cases the amount of foreign service shall be expressly stated.

17. A medical officer retiring after full-pay service of twenty-five years and upwards, may, if recommended for the same by the head of his Department, receive a step of honorary rank, but without any consequent increase of half-pay.

18. Good Service Pensions shall be awarded to the most meritorious officers of the Army Medical Department, under such regulations as shall be from time to time determined by us, with the advice of our Secretary of State.

19. Six of the most meritorious officers of the Army Medical Department shall be named our Honorary Physicians, and six our Honorary Surgeons.

20. Medical officers shall have a right to retire on half-pay after twenty years' service. Medical officers of the rank of Surgeon-Major or Surgeon shall be placed on the retired list at the age of fifty-five, and all Surgeons-General and Deputy Surgeons-General at the age of sixty years.

21. Our Secretary of State may, when he shall deem it fit, employ medical officers on the half-pay list in special situations at such rates of pay, in addition to half-pay, as he shall from time to time determine; but such officers shall vacate their appointments on attaining the age of sixty-five years.

22. A medical officer who, having voluntarily resigned his commission, has subsequently been permitted to re-enter the Department, shall not, except under very special circumstances to be approved by our Secretary of State, be allowed to reckon his former service.

Service on the West Coast of Africa.

23. Services of medical officers upon the West Coast of Africa shall be voluntary.

24. Each year or portion of a year shall be allowed to reckon double towards retirement or towards the gratuities fixed by Articles 9 and 12, but not towards increased pay, provided that the officer shall serve at least twelve months on the West Coast of Africa.

25. For each year's service on the Coast, a medical officer shall be entitled to a year's leave at home, and for every additional period beyond a year he shall have an equivalent extension of leave.

26. Officers who may volunteer for service on the West Coast of Africa shall receive double pay while actually serving on the Coast.

Non-Effective Pay.

27. A medical officer of more than ten years' service placed on half-pay by reduction of establishment, or on the report of a Medical Board in consequence of wounds or ill-health, caused in and by the discharge of his duties, or on account of age (under Article 20), shall be entitled to half-pay in accordance with the following daily rates:—Surgeon-General, after thirty years' service, £1, 17s. 6d.; twenty-five years, £1, 13s. 6d.; twenty years, £1, 10s. Deputy Surgeon-General, after thirty years, £1, 5s. 6d.; twenty-five years, £1, 2s. 6d.; twenty years, £1, 1s. Surgeon-Major, after twenty-five years, £1; twenty years, 16s. 6d.; fifteen years, 13s. 6d.; twelve years, 11s. Surgeons, after ten years, 10s.

28. The rate of half-pay awarded to officers retiring for their own convenience, after twenty years' service on full-pay, under Article 20, shall not exceed one-half of their full-pay at the time of retirement.

29. Every medical officer who shall retire after a service upon full-pay of twenty-five years, shall be granted a rate of half-pay equal to seven-tenths of the daily pay he may have been in receipt of when thus retiring on half-pay, provided he shall have served three years in his rank, or shall have served abroad for ten years in all ranks, or for five years with an army in the field. An officer of twenty-five years' full-pay service, whose service falls within neither of these conditions, shall be entitled to only seven-tenths of the daily pay he was in receipt of prior to his last promotion.

30. Medical officers of twenty years' full-pay service, placed temporarily on half-pay on account of ill-health, may, however, be allowed to retire on permanent half-pay at the rate fixed by Article 27, if after one year on half-pay he shall be reported by a Medical Board to be permanently unfit for further service.

31. In all matters not specially provided for in our present Warrant, the Officers of the Medical Department of our Army shall be subject to the General Regulations for the Departments of our Army. [*N.B.*—The rates of pay, including allowances, while serving in India, will range from 317 rupees (£31, 14s.) to 433 rupees (£43, 6s.) per month, according to length of service.]

ARMY MEDICAL SCHOOL.

ROYAL VICTORIA HOSPITAL, NETLEY.

President of the Senate.—Sir William M. Muir, K.C.B., M.D., Director-General of the Army Medical Department.

Members of the Senate.—Sir Alexander Armstrong, M.D., K.C.B., F.R.S., Director-General Naval Medical Department; Sir J. Fayrer, M.D., K.C.S.I., F.R.S., Physician to the Indian Council; Surgeon-General T. Longmore, C.B., Professor of Military Surgery; Surgeon-General W. C. Maclean, M.D., C.B., Professor of Military Medicine; William Aitken, M.D., F.R.S., Professor of Pathology; F. S. B. F. De Chaumont, M.D., F.R.C.S.E., F.R.S., Surgeon-Major, Professor of Military Hygiene; J. D. Macdonald, M.D., F.R.S., R.N., Deputy Inspector-General of Hospitals and Fleets, Professor of Naval Hygiene; The Principal Medical Officer, Royal Victoria Hospital, Netley.

Assistant Professors.—Surgeons-Major H. R. Lobveale, M.D., F. P. Staples, J. P. H. Boileau, M.D., and J. L. Notter, M.D.

Candidates for Commissions in the Army, Navy, and in the Queen's Indian Service, proceed to Netley after passing the Examination at London. At Netley they attend the Medical and Surgical Practice of the Royal Victoria Hospital, and learn the system and arrangements of Military Hospitals. During four months they attend the lectures given by the Professors and Assistant-Professors, and go through a course of practical instruction in the Hygienic Laboratory and Microscopical Room. The lectures and practical instruction are intended to explain the specialities of Military Medical Practice, attention being directed to gunshot and other wounds, surgical arrangements in the field during action and sieges, means of transport, field hospitals, tropical diseases and their means of investigation, service in India and in the various colonies, the sanitary arrangements in peace and war, and the means of carrying out the sanitary regulations. Every opportunity is taken of practising operations on the dead body, and practical points of a like kind.

REGULATIONS FOR THE EXAMINATION OF CANDIDATES FOR THE APPOINTMENT OF SURGEON IN HER MAJESTY'S INDIAN MEDICAL SERVICE.

1 *Limits of Age.*—All natural-born subjects of Her Majesty, between 22 and 28 years of age at the date of the examination, and of sound bodily health, may be Candidates. They may be married or unmarried. They must possess a Diploma in Surgery, or a license to practise it, as well as a Degree in Medicine, or a license to practise it in Great Britain or Ireland.

2. *Declaration to be submitted.*—They must subscribe and send in to the Military Secretary, India Office, Westminster, so as to reach that address at least a fortnight before the date fixed for the Examination, a declaration according to the annexed form.

3. This declaration must be accompanied by the following documents:—

a. *Proof of age*, either by extract from the register of the parish in which the Candidate was born, or, where such extract is unattainable, by his own declaration (pursuant to the Act 5 & 6 Will. 4, c. 62), form of which can be obtained at the India Office. A certificate of baptism which does not afford proof of age will be useless.

b. *A certificate of moral character* from a magistrate, or a minister of the

religious denomination to which the Candidate belongs, who has personally known him for at least the two years preceding the date of his application.

c. *A certificate of registration*, in accordance with the Medical Act of 1858, of the degrees, diplomas, and licenses possessed by the Candidate.

4. *Physical Examination*.—The physical fitness of Candidates will be determined previous to examination by a Board of Medical Officers, who are required to certify that the Candidate's vision is sufficiently good to enable him to perform any surgical operation without the aid of glasses. A moderate degree of myopia would not be considered a disqualification, provided it did not necessitate the use of glasses during the performance of operations, and that no organic disease of the eyes existed.

Every Candidate must also be free from organic disease of other organs, and from constitutional weakness, or other disability likely to unfit him for military service in India.

5. *Subjects for Examination*.—On producing the foregoing qualifications, the Candidate will be examined by the examining Board in the following compulsory subjects, and the highest number of marks attainable will be distributed as follows :—

	Marks.
a. Anatomy and Physiology,	1000
b. Surgery,	1000
c. Medicine, including Therapeutics, the Diseases of women and children,	1000
d. Chemistry and Pharmacy, and a practical knowledge of Drugs,	100

(The examination in Medicine and Surgery will be in part practical, and will include operations on the dead body, the application of surgical apparatus, and the examination of medical and surgical patients at the bedside.)

6. The eligibility of each Candidate for the Indian Medical Service will be determined by the result of the examinations in these subjects only.

7. *Voluntary Examination*.—Candidates who desire it will be examined in French, German, and Hindustani, Comparative Anatomy, Zoology, Natural Philosophy, Physical Geography, and Botany, with special reference to *Materia Medica*.

8. The number of marks gained in these subjects will be added to the total number of marks obtained in the obligatory part of the examination by Candidates who shall have been found qualified for admission, and whose position on the list of successful competitors will thus be improved in proportion to their knowledge of modern languages and natural sciences.

9. The maximum number of marks allotted to the voluntary subjects will be as follows :—

French, German, and Hindustani (150 each),	450
Natural Science,	300

10. *Text-Books*.—The subjects for this part of the examination will be taken from the following books :—

Animal Kingdom, by W. S. Dallas, F.L.S.

Outlines of the Structure and Functions of the Animal Kingdom, by Rymer Jones; or *Cours Élémentaire d'Histoire Naturelle*, par Milne Edwards.

Lindley's *School Botany*, Lindley's *Medical and Economic Botany*, Henfrey's *Elementary Course of Botany*.

Elements of Natural Philosophy, by Golding Bird and C. Brooks.

Physical Geography, by Mrs Somerville.

11. The Examiners in London will prepare a list in order of merit, with the marks affixed in the different subjects, to be transmitted to the Director-General and communicated to the Professors of the Army Medical School. If any Candidate is found to be deficient on any particular subject, this shall be stated, in order that he may receive special instruction on the point at Netley.

12. *Course at Netley.*—After passing the preliminary examination, Candidates will be required to attend one entire course of practical instruction at the Army Medical School, before being admitted to examination for a commission, on—

- (1.) Hygiène.
- (2.) Clinical and Military Medicine.
- (3.) Clinical and Military Surgery.
- (4.) Pathology of Diseases and Injuries incident to Military Service.

These courses are to be of not less than four months' duration; but Candidates who have already gone through a course at Netley as Candidates for the Army or Navy Medical Service may, if thought desirable, be exempted from attending the School a second time.

13. *Pay and Uniform while at Netley.*—During the period of his residence at the Army Medical School, each Candidate will receive an allowance of 5s. per diem with quarters, or 7s. per diem without quarters, to cover all costs of maintenance; and he will be required to provide himself with uniform (viz., the regulation undress uniform of a Surgeon of the British Service, but without the sword).

14. All Candidates will be required to conform to such rules of discipline as the Senate may, from time to time, enact.

15. *Examination at Netley.*—At the conclusion of the course, Candidates will be required to pass an examination on the subjects taught in the School. The examination will be conducted by the Professors of the School.

The Director-General, or any Medical Officer deputed by him, may be present and take part in the examination. If the Candidate give satisfactory evidence of being qualified for the practical duties of an Army Medical Officer, he will be eligible for a Commission as Surgeon.

16. *Position on List of Surgeons, how determined.*—The position of the Candidates on the list of Surgeons will be determined by the combined results of the preliminary and of the final examinations, and, so far as the requirements of the service will permit, they will have the choice of Presidency in India according to their position in that list.

INDIA OFFICE, February 1879.

N.B.—The examinations for admission to the Indian Medical Service usually take place twice a year, viz., in February and in August.

There will be an examination for twenty-four appointments in February 1880.

INDIAN MEDICAL SERVICE.

MEMORANDUM REGARDING THE POSITION OF MEDICAL OFFICERS TO BE
APPOINTED TO HER MAJESTY'S INDIAN FORCES.

India Office, March 1879.

1. The regulations are those in force at the present time. They are subject to any alteration that may be determined on.

2. *Passage to India.*—Passage allowance to India on appointment will be given, or a passage provided. When passages are provided on board the Indian troop-ships, a charge for messing will be made at the rate laid down in the Royal Passage Warrant of 1865—viz., 3s. 6d. a day; but, when wine and beer are not included in the mess, and it is so stated on the messing certificate, the daily contribution required will be 2s. 6d. only.

3. All Surgeons who shall neglect or refuse to proceed to India under the orders of the Secretary of State for India within two months from the date of leaving Netley, will be considered as having forfeited their appointment, unless special circumstances shall justify a departure from this regulation.

4. *Pay previous to Embarkation.*—Pay at the rate of 10s. a day will be

allowed from date of passing final examination at the Army Medical School, until date of embarkation when a passage is provided, or for a period of two months when the Surgeon is permitted to make his own arrangements for passage. An advance of two months' pay will also be made on embarkation.

5. *Grades and Relative Rank*.—The grades of Medical Officers in the Indian Military Forces are four in number, viz. :—

1. Surgeon-General, ranking as Major-General, according to the date of his commission.
2. Deputy Surgeon-General, as Colonel according to the date of his commission.
3. Surgeon-Major, as Major according to the date of his commission ; and after twenty years' service as Surgeon and Surgeon-Major, as Lieutenant-Colonel, but junior of that rank except for choice of quarters.
4. Surgeon, as Lieutenant according to the date of his commission ; and after 'six years' service as Captain according to the date of the completion of such service.

6. *Promotion*.—A Surgeon is promoted to Surgeon-Major on completion of twelve years' service from date of first commission, subject to his passing the prescribed examination.

7. In cases, however, of emergency, or when the good of the service renders such alteration desirable, it is competent for the Secretary of State for India, on the recommendation of the Viceroy and Governor-General of India in Council, to shorten the period of service above mentioned, in such manner as he shall deem fit and expedient.

8. The examination for promotion may be taken at any time after the Surgeon has served nine or more years.

9. When Surgeons have served the requisite time, they will be examined in the following manner :—

A series of printed questions prepared by an examining board, consisting of the Principal of the Medical College and any two or more of the professors he may associate with himself for the purpose, will be sealed and sent by the Surgeon-General to the principal medical officers of stations where Surgeons may be eligible for examination. It will be the duty of the principal medical officer of the station to deliver the sealed questions to the Surgeons, and to see that they are answered without the assistance of books, notes, or communication with any other person. The answers are to be signed and delivered, sealed, to the Principal Medical Officer, who is to send them, unopened, to the Surgeon-General, together with a declaration from the Surgeon himself, or certificate from a superior medical officer, if there is one, that he has availed himself of every opportunity of practising surgical operations on the dead body.¹

10. The Surgeon is also required to transmit, together with his answers to the Surgeon-General, a medico-topographical account of the station where he may happen to be at the time, or of some other station where he may have been resident sufficiently long to enable him to collect the necessary information for such a report. Failing this, he will send a medico-statistical report of his charge for a period of at least twelve months.

11. If the examining board is satisfied with the replies to the questions, and the Surgeon-General is satisfied with the certificates and with the medico-topographical or statistical report, the Surgeon will be held qualified for promotion.

12. All promotion from the rank of Surgeon-Major to that of Deputy Surgeon-General, and from the rank of Deputy Surgeon-General to that of Surgeon-General, is given by selection for ability and merit.

13. *Tenure of Office in Administrative Grades*.—The tenure of office of Surgeons-General and Deputy Surgeons-General is limited to five years.

14. Deputy Surgeons-General, if not disqualified by age, are eligible either for employment for a second tour of duty in the same grade, or for employment in the higher grade of Surgeon-General by promotion thereto.

¹ The Surgeon may see this certificate before it is sent to the Surgeon-General.

15. Absence on leave in excess of six months on medical certificate, or of four months on private affairs, involves forfeiture of appointment.

16. *Pay and Allowances when in India.*—Officers who may hereafter be appointed to the Indian Medical Service will receive pay in India according to the following scale:—

Rank.	Years' Service.	Pay and Allowances per Mensem.		
		R.	A.	P.
Surgeon-Major . . .	25	888	12	0
" . . .	20	852	3	7
" . . .	15	677	6	11
" . . .	12	640	14	6
Surgeon . . .	10	410	9	5
" . . .	6	392	5	2
" . . .	5	304	14	2
" . . .	under 5	286	10	0

17. On first appointment they will only come into receipt of Indian pay and allowances from the date of their arrival in India.

18. The monthly salaries of the principal administrative and military appointments are fixed at the following consolidated sums:—Surgeon-General, Bengal, Rs. 2700; Madras, Rs. 2500; Bombay, Rs. 2500; Deputy Surgeon-General, Rs. 1800; Surgeon-Major, of twenty years' service and upwards, in charge of Native regiments, Rs. 1000, with Rs. 90 horse allowance in Cavalry regiments; Surgeon-Major in charge of Native regiments, Rs. 800, with Rs. 90 horse allowance in Cavalry regiments; Surgeon, above five years' full-pay service, in charge of Native regiments, Rs. 600, with Rs. 60 horse allowance in Cavalry regiments; Surgeon, under five years' full pay service, in charge of Native regiments, Rs. 450, with Rs. 60 horse allowance in Cavalry regiments.

19. The salaries of other medical appointments in the Civil and Military Departments are consolidated, and vary from Rs. 1800 to Rs. 400 per mensem.

20. Qualified officers of the Medical Service are also eligible for appointments in the Assay Department. The salaries of these appointments are from Rs. 600 to Rs. 2250 per mensem.

21. A medical officer will, however employed, be restricted to the rate of pay laid down in para. 16, until he shall have passed the examination in Hindustani, known as the "Lower Standard."

22. Surgeons-General and Deputy Surgeons-General, on vacating office at the expiration of the five years' tour of duty, will be permitted to draw *in India* respectively an unemployed salary of Rs. 1200 per mensem in the former, and Rs. 900 in the latter case, for a period of six months from the date of their vacating office, after which they will be placed while unemployed on the following scale of pay:—Surgeon-General, after thirty years' service on full-pay, £2, 5s.; after twenty-five years' service on full-pay, £2, 5s.; after twenty years' service on full-pay, or on promotion should this period of service not be completed, £2; Deputy Surgeon-General, after thirty years' service on full-pay, £1, 14s.; after twenty-five years' service on full-pay, £1, 10s.; after twenty years' service on full-pay, or on promotion should this period of service not be completed, £1, 8s.

23. *Furloughs.*—An officer will be eligible for one year's furlough on the completion of five years' actual service in India, and for an additional year after each subsequent five years' service.

24. While on furlough an officer will receive half the emoluments of his office.

25. No absentee shall draw more than £1000 or less than £250 per annum.

26. Upon certificate of a Medical Board, an officer not entitled to furlough,

if he has served not less than two years in India, may receive it for any period not exceeding two years.

27. Surgeons under six years' service, and in receipt of Indian allowances as subalterns, on returning to England on sick certificate receive passage allowance.

28. Officers of the Administrative Grade are entitled during their tenure of appointment to six months' leave of absence on sick certificate, or four months' leave on private affairs.

29. *Retiring Pensions.*—Officers of the Indian Medical Service will be allowed to retire on the following scale of pension, on completion of the required periods of service:—After thirty years' service in India, £550; after twenty-seven years' service in India, £456; after twenty-four years' service in India, £365; after twenty-one years' service in India, £292; after seventeen years' service in India, £220.

30. Time of service for pension will reckon from date of arrival in India. The period of residence at the Army Medical School will reckon as service for the above pension, except in the cases of officers who have gone through the course at Netley as candidates for the British Army or Navy Medical Service.

31. A Surgeon-General, after five years' active employment in India in that grade, will be entitled to retire upon a pension of £350 per annum, in addition to that to which he may be entitled under the above scale.

32. A Deputy Surgeon-General will, after five years' active employment in India in that grade, be entitled to retire upon a pension of £250 per annum, in addition to the pension to which he may be entitled under the above scale.

33. In each of the above cases stated in paras. 31 and 32, six months' absence on medical certificate will be allowed to count towards actual service in those grades.

34. A Surgeon-General or Deputy Surgeon-General who has completed his term of service and has reverted to British pay, may reside in Europe, at the same time qualifying for higher pension.

35. With a view to maintain the efficiency of the service, all medical officers of the rank of Surgeon-Major shall be placed on the Retired List when they shall have attained the age of fifty-five years, and all Surgeons-General and Deputy Surgeons-General when they shall have attained the age of sixty-five years. In any special case, where it would appear to be for the good of the service that the officer should continue in employment, he may be so continued, subject in each case to the sanction of the Secretary of State for India in Council.

36. A medical officer retiring after a service of twenty-five years and upwards may, if recommended for the same by the Government of his Presidency, receive a step of honorary rank, but without any consequent increase of pay.

37. Officers compelled to leave the service on account of ill-health, and not entitled to full-pay pension under present regulations, will be allowed the half-pay of their relative rank, as laid down in the Royal Warrant of 10th May 1873:—Surgeon-Major of twenty years' service, ranking with Lieutenant-Colonel, 11s. per day; Surgeon-Major, ranking with Major, 9s. 6d. per day; Surgeon, ranking with Captain, 7s. per day; Surgeon under six years' service, ranking with Lieutenant, 4s. per day; Surgeon under three years' service, ranking with Lieutenant, 2s. 6d. per day. Officers cannot retire *in India* on half-pay (No. 54, 28th February 1865).

38. *Wound Pensions.*—Medical officers are entitled to the same allowances granted to Her Majesty's Indian Military Forces on account of wounds and injuries received in action as combatant officers holding the same relative rank.

39. *Family Pensions.*—The claims to pension of widows and families of medical officers shall be treated under the provisions of such Royal Warrant regulating the grant of pensions to the widows and families of British officers as may be in force at the time being. (The Royal Warrant of 27th December 1870 is the one now in force.)

40. The widows and families of medical officers are also entitled to pensions from the Indian Service Family Pension Fund, to which all Surgeons must, as a condition of their appointment, subscribe from the date of their arrival in India.

NAVY MEDICAL DEPARTMENT.

Admiralty, 9 New Street, Spring Gardens, London, S. W.

REGULATIONS RELATIVE TO THE EXAMINATION OF CANDIDATES FOR COMMISSIONS IN THE MEDICAL SERVICE OF THE ROYAL NAVY.

Candidates for admission to the Naval Medical Service must subscribe and send to the Medical Department, Admiralty, proofs of their qualifications, etc., similar to those required by the Army Medical Department. The regulations and subjects for examination are also similar.

After passing the examination, every candidate will be required to attend one entire course of practical instruction in the Medical School at Netley, on—(1) Hygiene; (2) Clinical and Naval and Military Medicine; (3) Clinical and Naval and Military Surgery; (4) Pathology of Diseases and Injuries incidental to Naval and Military Service.

At its conclusion, the candidate will be required to pass an examination on the subjects taught in the School. If he give satisfactory evidence of being qualified for the practical duties of a Naval Medical Officer, he will be eligible for a commission as Surgeon.

During the period of his residence at the Netley Medical School, each candidate will receive an allowance of 5s. per diem with quarters, or 7s. per diem without quarters, to cover all cost of maintenance; and he will be required to provide himself with uniform—viz., the regulation undress uniform of a Surgeon, but without the sword.

The full and half pay of Naval Medical Officers is in accordance with the following scale:—Full-pay: Inspector-General of Hospitals and Fleets—On promotion or under twenty-five years' service, £2, 5s.; ditto or above twenty-five years' service, £2, 6s.; and for each additional year of service 1s. a day more until the maximum is reached—namely, £2, 10s. Deputy Inspector-General of Hospitals and Fleets—On promotion or under twenty-two years' service, £1, 11s.; ditto or above twenty-two years' service, £1, 12s.; and for each additional year of service 1s. a day more until the maximum is reached—namely, £1, 18s. Fleet Surgeon—On promotion or under twenty years' service, £1, 3s.; ditto or above twenty years' service, £1, 4s.; and for each additional year of service 1s. a day more until the maximum is reached—namely, £1, 10s. Staff Surgeon—On promotion or under fourteen years' service, 18s.; ditto or under seventeen years' service, £1; and for each additional year of service 1s. a day more until the maximum is reached—namely, £1, 2s. Surgeon—Under five years' service, 11s.; under eight years' service, 12s. 6d.; under eleven years' service, 14s.; under fourteen years' service, provided he passed his examination for Staff Surgeon while under ten years' service, 15s. 6d.; above fourteen years' service, ditto, 17s. Half-pay: Surgeon—Under five years' service, 6s.; under eight years' service, 8s.; under eleven years' service, 10s.; above eleven years' service, provided he passed his examination for Staff Surgeon while under ten years' service, 11s. Staff Surgeon—On promotion or under fourteen years' service, 11s.; ditto or under seventeen years' service, 13s.; ditto or above seventeen years' service, 14s. Fleet Surgeon—On promotion or under twenty years' service, 16s.; ditto or above twenty years' service, 16s. 6d.; and for each additional year of service 6d. a day more until the maximum is reached—namely, 18s. 6d. Deputy Inspector-General of Hospitals and Fleets—On promotion or under twenty-two years' service, £1, 1s.; ditto or above twenty-two years' service, £1, 2s.; and for each additional year of service 1s. a day more until the maximum is reached—namely, £1, 7s. Inspector-General of Hospitals and Fleets—On promotion or under twenty-five years' service, £1, 11s.; ditto or above twenty-five years' service, £1, 12s.; and for each additional year of service 1s. a day more until the maximum is reached—namely, £1, 18s.

PRELIMINARY EXAMINATIONS for the DIPLOMAS of the ROYAL COLLEGES of PHYSICIANS and SURGEONS of EDINBURGH, during the Year 1879-80.

I. The *Preliminary Examination in General Education* for the Double Qualification in Medicine and in Surgery conferred conjointly by the Royal Colleges of Physicians and Surgeons, and also for the separate Diploma of each College, for 1879-80, will embrace the following subjects :—

1. *English Language*, including Grammar and Composition.
2. *Arithmetic*, including Vulgar and Decimal Fractions.
3. *Algebra*, including Simple Equations.
4. *Geometry*; First Two Books of Euclid.
5. *Latin*; Cicero de Naturâ Deorum; Virgil, *Æneid*, Book II.
6. One of the following subjects at the option of the candidate: (1.) *Greek*; (2.) *French*; (3.) *German*; (4.) *Natural Philosophy*, including Mechanics, Hydrostatics, and Pneumatics.

II. In *Latin*, besides translation from one of the books above prescribed, the examination will include grammar, translation of a passage from an unprescribed author, and translation of a passage from English into Latin, the more difficult words being supplied.

In *Greek*, the books prescribed are, Xenophon's *Anabasis*, Book III., and Homer's *Iliad*, Book III. Besides translation from both these, parsing, derivation of English words from Greek, and translation of a passage from English into Greek are required.

In *French*, the book prescribed is Molière, *Les Femmes Savantes*. Parsing and translation from English into French are also required.

In *German*, the book prescribed is Schiller's *Maria Stuart*. Parsing and translation from English into German are also required.

Natural Philosophy, as defined above, corresponds to *Mechanics* in the preliminary examination of the University of Edinburgh.

III. The examinations will be held on the following days, beginning each day at twelve o'clock :—Saturday, 25th October, and Monday, 27th October, 1879; Tuesday, 13th April, and Wednesday, 14th April, 1880; and Saturday 10th July, and Monday, 12th July, 1880. On each occasion the subjects of the first day's examination will consist of English, Latin, and Geometry; and those of the second day, of Arithmetic, Algebra, and the optional subjects.

Candidates are required to give in their names to the officer of either College not less than two days prior to the day of examination.

Each candidate shall pay a fee of ten shillings previous to the examination. And in the event of his being unsuccessful, he shall pay a fee of Five Shillings for each subsequent examination at which he is present.

IV. The examinations will be conducted according to the following regulations :—

1. The competence of the candidate will be ascertained by means of written exercises. Candidates whose success amounts to a certain minimum will be admitted.

2. Each candidate must bring with him a card having his name, place of birth, and an address that will find him by post, distinctly written on it.

3. The exercises on each of the subjects must, in every case, be written on separate papers; and the candidate must attach his signature and his address to each sheet of his written paper, and on the outside when folded, before giving it in to those who superintend the examination.

4. Books must not be employed, nor may assistance be given by one candidate to another, during the examination. Those who violate this necessary rule shall forfeit, although successful, the right to a certificate.

5. The decision of the examiners will be intimated to each candidate as soon as possible. Those who pass the examination will receive certificates to that

effect. In the case of those who are successful in part of the examination only, the subjects in which they have passed will be recorded, and they will not be again examined in the branch or branches in which they have been successful.

V. A certificate of having passed all the required subjects of the above examination entitles the possessor, on commencing Medical Study, to be registered as a Medical Student in the form required by the regulations of the General Medical Council, and, provided the candidate passes in three books of Euclid, is also admitted *pro tanto* by the Medical Faculty of the University of Edinburgh as an equivalent for the corresponding subjects of their preliminary examination for intending Graduates in Medicine.

A list of Examining Boards in the United Kingdom and in the Colonies, whose certificates are received *pro tanto* by the Royal Colleges, on the recommendation of the General Medical Council, will be found in the Appendix to the Regulations of the Colleges.

ALEXANDER PEDDIE, *President Royal College of Physicians.*

PATRICK HERON WATSON, *President Royal College of Surgeons.*

EDINBURGH, 2d June 1879.

Frequent inquiries having been made as to the exact nature of the Preliminary Examination for the Diplomas of the Royal Colleges of Physicians and Surgeons of Edinburgh, the Secretaries have supplied the following papers, which were given out at the examinations in 1876.

FIRST DAY.—COMPULSORY.

ENGLISH.

The candidate is required:—

1. To write a passage dictated by the examiner, with strict attention to spelling and punctuation.

2. To give the meaning and derivation of at least eight of the following words:—

Interest, Circumstance, Possibility, Demonstration, Disciple, Fidelity, Interposition, Infallible, Intelligence, Description, Unprofitable, Gradually.

3. To give a grammatical analysis of the following sentence:—

“So, of his gentleness,
Knowing I loved my books, he furnished me,
From my own library, with volumes that
I prize above my dukedom.”

4. To write a short essay on either of the two following subjects, viz.:—
“Boat racing,” or “International Exhibitions.”

[The essay need not exceed a folio page.]

GEOMETRY.

Euclid, Books 1 and 2.

1. The angles at the base of an isosceles triangle are equal, and if the equal sides be produced, the angles upon the other side of the base are equal.

2. To construct a triangle of which the sides shall be equal to three given straight lines.

Show where, in the construction, the demand is made that any two of these lines must be the greater than the third.

3. The complements of the parallelograms about the diagonal of any parallelogram are equal to one another.

Prove also any converse.

4. If a straight line be bisected and produced to any point, the rectangle contained by the whole line thus produced, and the part of it produced, together with the square of half the line bisected, is equal to the square of the line made up of the half and the part produced.

5. To divide a given straight line into two parts, so that the rectangle contained by the whole and one of the parts may be equal to the square of the other part.

If the line be 10 feet long, what are the parts?

Euclid, Book 3.

1. To find the centre of a given circle. Prove that the line which joins the middle points of two parallel chords passes through the centre of the circle.

2. If a straight line touch a circle, the straight line drawn from the centre to the point of contact is perpendicular to the line which touches the circle.

3. If from any point without a circle two straight lines be drawn, one of which cuts the circle, and the other touches it, the rectangle contained by the whole line which cuts the circle and the part of it without the circle, is equal to the square of the line which touches it.

LATIN.

I.

Translate :—

Caesar, etsi idem, quod superioribus diebus acciderat, fore videbat, ut, si essent hostes pulsi, celeritate periculum effugerent; tamen, nactus equites circiter xxx, quos Commius, Atrebas, de quo ante dictum est, secum transportaverat, legiones in acie pro castris constituit. Commisso proelio, diutius nostrorum militum impetum hostes ferre non potuerunt, ac terga verterunt: quos tanto spatio secuti, quantum cursu et viribus efficere potuerunt, complures ex iis occiderunt; deinde, omnibus longe lateque afflictis, incensisque, se in castra receperunt.

Parse *idem*. Parse *acciderat*. Parse *pulsi*. Parse *celeritate*; compare the adjective from which it is derived; also compare the adverb signifying swiftly. Parse *nactus*; give the third person singular of the imperfect indicative and imperfect subjunctive; also of the future present indicative and of the present subjunctive, and decline these tenses. Compare *longe* and *late*.

Numerical value, 50.

II.

O! mihi praeteritos referat si Jupiter annos;
Qualis eram, quum primam aciem Praeneste sub ipsa
Stravi, scutorumque incendi victor acervos,
Et regem hac Herilum dextra sub Tartara misi;
Nascenti cui tris animas Feronia mater,
Horrendum dictu! dederat, terna arma movenda;
Ter leto sternendus erat; cui tunc tamen omnis
Abstulit haec animas dextra, et totidem exuit armis:
Non ego nunc dulci amplexu divellerer usquam,
Nate, tuo; neque finitimus Mezentius usquam,
Huic capiti insultans, tot ferro saeva dedisset
Funera, tam multis viduasset civibus urbem.

Parse *referat*. Parse *stravi*; give the first person plural of the present indicative, of the pluperfect indicative, and of the imperfect subjunctive. Parse *dextra*; what word is understood after it? Parse *dederat*. Parse *divellerer*. Parse *viduasset*. Numerical value, 50.

III.—*Passage from an unprescribed Author.*

Neque tamen exercitus populi Romani laetam aut incruentam victoriam adeptus: nam strenuissimus quisque aut occiderat in proelio, aut gravitur vulneratus discesserat. Multi autem, qui de castris visundi, aut spoliandi, gratia processerant, volventes hostilia cadavera, amicum alii, pars hospitem, aut cognatum, reperiebant: fuere item, qui inimicos suos cognoscerent. Ita varie per omnem exercitum laetitia, moeror, luctus atque gaudia agitabantur.

Parse *adeptus*. Parse *occiderat*. Parse *fuere item, qui inimicos suos cognoscerent*. Numerical value, 50.

IV.—*Render in correct Latin the following Passage:—*

When Titus one day recollected, at supper, that he had done nothing for any one that day, he said, O friends! to-day I have lost a day. He was a prince of so much easiness and generosity, that he denied no man anything; and when he was blamed for it by his friends, he replied, that no man ought to go away sorrowing from an emperor.

Cum Titus quidam dies recordor, in coena, sui nihil quisquam praesto ille dies, dico, O amicus! hodie dies perdo. Sum princeps tantus facilitas et liberalitas, ut nullus quisquam nego; et cum ab amicus reprehendo, respondeo, nullus tristis debeo ab imperator discedo.

Numerical value, 50.

In order to pass, the candidate must have done one or other, but not both, of Nos. I. and II. He must also have done Nos. III. and IV.; and must have obtained in all 100 marks.

SECOND DAY.—COMPULSORY.

ARITHMETIC.

1. £100 are laid out in purchasing articles at 17s. 6d. a dozen, which are afterwards sold at 35s. a score. Required the gain on the transaction.

2. Find the cost of 3 qrs. 17 lbs. 13 oz. at $6\frac{1}{2}$ d. per oz.

3. If $15\frac{1}{2}$ yards cost $17\frac{1}{8}$ s., what is the cost of $\frac{3}{8}$ of a piece which measures $29\frac{1}{4}$ yards?

4. Reduce the following to their simplest forms:

$$(1.) \frac{4}{7} + \frac{2}{21} + \frac{5}{6}.$$

$$(2.) \frac{4}{7} \times \frac{2}{21} \div \frac{5}{6}.$$

$$(4.) \left(\frac{4}{7} + \frac{2}{21} \right) \div \frac{5}{6}.$$

5. A room, 22 feet long, requires $58\frac{3}{4}$ yards of carpet $\frac{3}{4}$ of a yard broad to cover it. Required the breadth of the room.

6. Find the simple interest of £517 for $2\frac{1}{2}$ years at $3\frac{1}{2}$ per cent.

7. The *hectare* is a square whose side is 100 mètres. Express the hectare in acres—the mètrè being 39.37 inches.

8. The pound sterling is worth in Canada 4 dollars 75 cents. Reduce 1000 dollars to pounds.

N.B.—The working of each question, as well as the answer, must be given in full.

ALGEBRA.

1. Add together—

$$\frac{1}{2}(2a - 3b + 4c), \frac{1}{3}(2b - 3a + 4c), \text{ and } \frac{1}{4}(2c - 3b + 4a).$$

2. Divide $a^4 + 8b^2x^2(a^2 - 2) + 16b^4x^4$ by $a^2 + 4bx + 4b^2x^2$.

If $a = 1$, the quotient is a complete square; give its square root.

3. Resolve into factors:—

$$(1.) (3x - 2)^2 - (x - 3)^2.$$

$$(2.) (x + y)^2 + 2(x^2 + xy) - 3(x^2 - y^2).$$

$$(3.) (1 + ax)^2 - (a + x)^2.$$

4. A cistern would be filled by the influx pipe in 15 minutes, and emptied by the efflux pipe in 17 minutes. How long will it take to fill the cistern when both pipes are open together?

5. Solve the following equations:—

$$(1.) \frac{1}{4x} + \frac{1}{7x} = 11.$$

$$(2.) \frac{4x - 2}{3} + 4y - 3 = 19.$$

$$\frac{8y - 6}{13} + 9x - 7 = 40.$$

$$(3.) \sqrt{30 + x} + \sqrt{10 + x} = 10.$$

6. A room is twice as long as it is broad; if you increase the length of the room by 4 feet and its breadth by 2, the area of the floor will be increased by 152 feet. Required the dimensions of the room.

7. Find the least common multiple of $2x^2 + x - 6$ and $4x^2 - 4x - 3$.

N.B.—The working of each question, as well as the answer, must be given in full.

SECOND DAY.—OPTIONAL.

GREEK.

Translate:—

I. (*Herodotus, Book I.*)

Ἔχοντι δὲ οἱ τοῦτον τὸν πόνον πέμψασα ἡ Τόμυρις κήρυκα ἔλεγε τάδε· Ὡ βασιλεῦ Μήδων, παῦσαι σπεύδων τὰ σπεύδεις· οὐ γὰρ ἂν εἰδείης εἰ τοι ἐς καιρὸν ἔσται ταῦτα τελεύμενα· παυσάμενος δὲ βασιλεὺς τῶν σεωτοῦ, καὶ ἡμέας ἀνέχου ὁρέων ἀρχοντας τῶν περ ἄρχομεν. οὐκ ἔβηλῃς ὑποθήκησι τησίδε χρέεσθαι, ἀλλὰ πάντα μᾶλλον ἢ δι' ἡσυχίης εἶναι. σὺ δὲ εἰ μεγάλως προθυμέαι Μασσαγετῶν πειρηθῆναι, φέρε, μοχθὸν μὲν τὸν ἔχεις ζευγνύς τὸν ποταμὸν, ἄφες, σὺ δὲ, ἡμέων ἀναχωρησάντων ἀπὸ τοῦ ποταμοῦ τριῶν ἡμερέων ὁδὸν, διάβαινε ἐς τὴν ἡμετέραν. εἰ δ' ἡμέας βούλει ἐσδέξασθαι μᾶλλον ἐς τὴν ὑμετέραν, σὺ τωὐτὸ ποίεε. Ταῦτα δὲ ἀκούσας ὁ Κύρος συνεκάλεσε Περσέων τοὺς πρῶτους, συναγείρας δὲ τούτους ἐς μέσον σφί προετίθει τὸ πρήγμα, συμβουλευόμενος ὁκότερα ποιεῖν. τῶν δὲ κατὰ τῶντο αἱ γνώμαι συνεξέπιπτον, κελυνόντων ἐσδέκεσθαι Τόμυριν τε καὶ τὸν στρατὸν αὐτῆς ἐς τὴν χώραν.

Parse πέμψασα. Parse παῦσαι. Parse εἰδείης. Parse ὁρέων. Parse ὑποθήκησι,—give its derivation. Parse πειρηθῆναι. Parse ἄφες. Parse πρήγμα,—give its derivation.

Numerical value, 50.

Translate:—

II. (*Homer, Iliad, Lib. II.*)

Ὅν δ' αὖ δῆμον τ' ἄνδρα ἰδοι, βοδώντ' αὖ τ' ἐφεύροι,
τὸν σκῆπτρῳ ἑλάσασκεν, ὁμοκλήσασκέ τε μῦθῳ·
Δαιμόνι, ἄτρεμας ἦσο, καὶ ἄλλων μῦθον ἄκουε,
οἱ σέο φέρτεροί εἰσι· σὺ δ' ἀπτόλεμος καὶ ἀναλκις,
οὔτε ποτ' ἐν πολέμῳ ἐναριθμιοι, οὐτ' ἐνὶ βουλῇ.
οὐ μὲν πως πάντες βασιλεύσομεν ἐνθάδ' Ἀχαιοί·
οὐκ ἀγαθὸν πολυκοιρανίη· εἰς κοίρανος ἔστω,
εἰς βασιλεὺς, ᾧ ἔδωκε Κρόνου παῖς ἀγκυλομήτεω
σκῆπτρόν τ' ἥδ' ἐθέμιστας, ἵνα σφίσιν ἑυβασίλῃη.
Ὡς ὅγε κοιρανέων διέπε στρατόν· οἱ δ' ἀγορήνδε
Ἀτρεΐδης ἐπεσσεύοντο, νεῶν ἀπο καὶ κλισιάων,
Ἥχῃ· ὥς ὅτε κύμα πολυφλοίσβοιο θαλάσσης
Ἀλγιάλῳ μεγάλῳ βρέμεται, σμαραγῇ δέ τε πόντος.
Ἄλλοι μὲν ῥ' ἔζοντο, ἐρήτυθεν δὲ καθέδρας.

Parse ἐφεύροι. Parse ἦσο. Parse φέρτεροί,—compare it. Parse πολυκοιρανίη. Parse διέπε. Decline κύμα in the singular, dual, and plural. Compare μεγάλῳ.

Numerical value, 50.

III.

Translate into Greek the following passage:—

Diogenes having heard a certain one saying, "Life is an evil," said, "Life is not an evil, but to live evilly, that is an evil."—Numerical value, 50.

IV.

Derive the following words from the Greek:—

Episcopal, Metallurgy, Apocalypse, Genealogy, Prophet, Planet, Misanthrope, Mythology, Ethnology, Polynesia, Apostrophe, Anonymous, Synonymous, Hygrometer, Eulogy, Epitaph, Epidemic.—Numerical value, 50.

[To pass, the candidate must do all the four passages, and obtain 140 marks.]

GERMAN.

1. Translate into English :—

Mein lieber Herr und Ehewirth! Magst du
 Ein redlich Wort von deinem Weib vernehmen?
 Des edeln Ibergs Tochter rühm' ich mich,
 Des vielerfahrenen Manns. Wir Schwestern sassen,
 Die Wolle spinnend, in den langen Nächten,
 Wenn bei dem Vater sich des Volkes Häupter
 Versammelten, die Pergamente lasen
 Der alten Kaiser und des Landes Wohl
 Bedachten in vernünftigem Gespräch.
 Aufmerkend hört' ich da manch kluges Wort,
 Was der Berständ'ge denkt, der Gute wünscht,
 Und still im Herzen hab' ich mir's bewahrt.
 So höre denn und acht' auf meine Rede!
 Denn, was dich presste, sieh, das wusst' ich längst.
 —Dir grollt der Landvogt, möchte gern dir schaden,
 Denn du bist ihm ein Hinderniss, dass sich
 Der Schwyzer nicht dem neuen Fürstenhaus
 Will unterwerfen, sondern treu und fest
 Beim Reich beharren, wie die würdigen
 Altvordern es gehalten und gethan.—
 Ist's nicht so, Werner? Sag' es, wenn ich lüge!

2. Parse the following phrases, conjugating the verbs :—*Rühm' ich mich; möchte gern dir schaden; sag es wenn ich lüge!*

3. Give examples from the above passage of verbs with separable and inseparable prefixes. Under what circumstances is the separable prefix separated from the verb?

4. Translate into German :—

Emperor Otto the Great was feared in all districts (*Land*) of Germany, for he was severe, and without mildness. He wore (*tragen*) a beautiful red beard, (*Bart*), and what he swore by this beard, he made true and unavoidable (*unabwendlich*).

NATURAL PHILOSOPHY.

1. State and prove the fundamental property of the lever.

Two weights respectively of 5 and of 10 lbs. are hung at the extremities of a straight bar 1 foot long, supposed without weight, where must the fulcrum be placed so that there may be equilibrium?

If the smaller weight descend 1-100th of an inch, how much will the larger ascend?

2. A triangular table, supposed without weight, is supported at its three angles, A, B, C; a weight is placed on it at any point O. Prove that the pressures sustained by the three props at A, B, C are respectively as the areas of the triangles O B C, O C A, O A B.

If O be the centre of gravity of the triangle, prove that the pressures are equal.

3. What is the origin of the force of gravity at the earth's surface? How far will a stone fall by the action of gravity in three seconds?

4. How is the result of the last question affected by the size and weight of the falling body (1) in vacuo; (2) in the air? Give an experimental determination of the pressure of the atmosphere. A vessel contains a quantity of air which weighs eight grains, and exerts a pressure of 17 lbs. per square inch. If three more grains of air be pumped in, what will the pressure become?

5. Explain the law of motion according to which force acts on a body in motion. Apply it to determine the path which a rifle-ball describes.

6. Define specific gravity. A body weighs 10 lbs. in air, and $8\frac{1}{4}$ lbs. in water. Determine its specific gravity. What will the same body weigh in salt water, whose specific gravity is 1.025?

7. Describe the common pump.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Edinburgh School of Medicine, etc., etc.

PROPYLAMINE IN ACUTE RHEUMATISM.—This alkaloid (trimethylamine, C_3H_9N) has long been employed on the Continent for every form of rheumatism, but has been little used either by English or American practitioners. Dr Gaston, in the *Indiana Journal of Medicine*, puts it as a prompt and efficient remedy in all uncomplicated cases, "subduing the pain in from twenty-four to forty-eight hours." Moreover, Dr James L. Tyson states (in the *Philadelphia Medical Times*) that more extended observation will, in his opinion, fully justify the merits ascribed to it; he would commend it to the earnest consideration of those whose prejudices exclude salicin and its compounds from their materia armamentaria. He also protests against the expectant treatment of acute rheumatism, and says he has succeeded over and over again in "breaking up" an acute attack of this affection, in periods varying from five to ten days, without a vestige of pain or swelling being felt, or a trace of heart complication, by the employment of salicylate of sodium or vinous tincture of colchicum. Where, however, either from the idiosyncrasy of the patient or other causes, these agents cannot be used, Dr Tyson recommends propylamine. The formula he uses is:—Propylamine chloridi, gr. xxiv.; aq. menth. piperitæ, aquæ, āā f. ℥ij. A tablespoonful to be taken every two or three hours. The dose of propylamine is six drops, similarly prepared and administered. By giving two grains of the chloride, as above, and swathing the joints in cotton wool, benefit was apparent in the first twenty-four hours.—*Medical Press and Circular*, 16th July 1879.

SULPHATE OF CINCHONIDIA. By A. G. CRAIG, M.D.—I commenced prescribing the sulphate of cinchonidia in the summer of 1875. During this summer there had been all over the United States an unprecedented rainfall. In July and August the Ohio river was over its banks, and the back water was up all the creeks and covered the low bottoms, destroying the corn and other crops almost matured. After the wet season was past the river fell rapidly, and during the months of August and September there was all along its course an offensive stench, produced by the decaying vegetation. During these months there was more sickness in this locality than I had ever known before or since in the

same length of time. There were cases of intermittent, remittent, and typho-malarial fevers in almost every family. There was a malarial element in almost every form of disease; even children with cholera infantum required an antiperiodic.

About this time I received a sample ounce of the sulphate of cinchonidia from Powers and Weightman of Philadelphia. I prescribed it at first for cases of intermittent fever, and it proved so efficient that I afterwards prescribed it for remittent and typho-malarial fevers with equal success. Since that time I have not used more than one ounce of sulphate of quinia in my practice, but have used several hundred ounces of the sulphate of cinchonidia with entire satisfaction. I do not consider cinchonidia better than quinia, but I do consider it equally efficacious in curing malarial diseases; and in some cases, where there is an idiosyncrasy or prejudice existing against the use of quinia, it is to be preferred. My experience has not been limited, and I am satisfied that there is little, if any, material difference in the virtues of the two medicines. I consider cinchonidia equal to quinia as a tonic antiperiodic and antipyretic, and in all diseases where there is a malarial complication. Cinchonidia can at the present time be bought at about one-seventh the price of quinia, and this ought to commend it to the country practitioner who has to furnish his patients with medicine, many of whom are extremely poor. Cinchonidia is not as reliable as either cinchonidia or quinia, and I have discontinued its use in my practice altogether. Quinia or cinchonidia is readily made into a pill by the addition of glycerin, about one drop to each three grains—a three-grain pill not being inconveniently large. In obstinate intermittents, five drops of Fowler's solution after each meal will prove a valuable adjuvant to the cinchonidia. Sulphate of cinchonidia is very soluble in spirit of nitrous ether; one ounce will dissolve readily fifty or sixty grains. In cases where there is torpid liver and constipated bowels the following is a favourite alterative and cathartic pill:—

R Leptandrin, gr. xxx.
 Podophyllin, gr. iv.
 Extr. colocynth comp., gr. xx.
 Hydrag. chlor. mit., gr. xv.
 Extr. tarax., q.s.

M. ft. pil., No. xv. Sig.—One or two pills *pro re nata*.

There are a peculiar cachexia and anemia, produced by malaria, generally present in persons who have had repeated attacks of malarial fever, and there is a constant tendency to relapse in spite of cinchonism. Accompanying this condition there is an enlargement of the spleen, and a pale, bloodless, and icteroid hue of the skin. In these cases carbonate of iron is the great remedy, combined with quinia or cinchonidia and strychnia.

R Cinchonidiæ sulphatis, ʒss.
 Pilulæ ferri carbonatis, ʒiss.
 Strychniæ sulphatis, gr. i.

M. ft. pil., No. xxx. Sig.—One pil. *ter in die*.

The above remedies seldom fail to reduce the enlarged spleen to its normal size in a few weeks, and restore the patient to health.

In the management of cases of malarial cachexia, the removal of the patient to a healthy locality, when practicable, is of prime importance.—*Vevay, Ind., American Practitioner*, November 1878.

PERISCOPE OF OTOLOGY AND OPHTHALMOLOGY.

By Dr KIRK DUNCANSON, Surgeon to the Ear Dispensary, 6 Cambridge Street ; Assistant-Surgeon, Eye Infirmary ; Lecturer on Diseases of the Ear, Edinburgh School of Medicine.

THE EFFECTS OF THE INTERNAL ADMINISTRATION OF QUININE UPON THE EAR.—D. B. St John Roosa, M.D., of New York, states there has been a belief among the laity—a belief that is shared by some medical men—that the internal use of quinine sometimes seriously and permanently injures the power of hearing. It cannot be said, however, that this belief is an established fact. "His experiments consisted in the administration of the sulphate of quinine in ten and fifteen grain doses to male adults, and in the examination of the drum heads when the subjective effects of the drug were observed. Hyperæmia of the membrana tympani was seen in all the cases but one ; and in one case there was also hyperæmia of the auricles and of the ocular conjunctivæ. There were five observations, and in one case no effect whatever was detected. This subject was anæmic, and accustomed to take quinine, while the others were not. The hyperæmia and tinnitus in those five cases were but temporary. Having thus cleared the way for the object of my inquiry, I beg my readers to assist me in further investigations upon this subject." Dr Roosa then proceeds to point out how simple the means are by which the general practitioner may make observations on the ears of his patients to whom he may be administering quinine. The observations should be made upon persons whose hearing on each side has been accurately tested by the watch and conversation. If there is any impairment of hearing on either side the subject should be rejected as not a proper one for the tests. If there is a history of previously existing loss of hearing power this should also exclude the case. The drumheads should be examined, and their appearance, especially as to hyperæmia, carefully recorded. During the administration of the quinine the hearing power should often be noticed, and the drumheads examined. Then in 10, 30, and, if possible, 60 and 90 days after the use of quinine has been given up, the hearing power, the appearance of the drumheads,

and the subjective symptoms, should be carefully noted, inquired into, and recorded. A hundred such observations made by different observers will go a part, if not all the way, toward settling the question as to whether quinine administered internally does permanently impair the hearing, and cause lasting subjective sensations referred to the ear. The writer, Dr Roosa, will thankfully acknowledge any exact information bearing upon this subject.—*North Carolina Medical Journal*, No. 3, vol. i. pp. 148 to 151.

M. CYON, who sometime since demonstrated the intimate relations existing between the semi-circular canals and the centres of innervation of the eye, has attempted to explain the physiological signification of these relations in a very interesting paper which was presented to the Academy by Claude Bernard just previous to his fatal illness. According to M. Cyon, the semi-circular canals are the peripheric organs of the sense of space, that is to say, the sensations excited by irritation of the nerve-endings in the ampullæ of these canals supply us with our ideas of length, breadth, and thickness, the impressions made in each canal corresponding to one of these three dimensions, and inducing our perceptions concerning the arrangement of the objects around us, and the position of our own body in relation to them. He also believes that the physiological stimulation of the peripheric termination peculiar to the organ of the sense of space takes place mechanically by means of the otoliths in the ampullæ, these otoliths being excited into motion by every active or passive movement of the head, and also by the aerial waves which the membrana tympani transmits to the fluid contained in the semi-circular canals. This being so, it follows that the portio mollis of the seventh nerve contains two nerves of sense altogether distinct in their offices, viz., the auditory nerve which furnishes the perception of sound, and the nerve of space which controls the distribution and graduation of the force of innervation, which may be communicated to the muscles which produce all the movements of the eye, the head, and the rest of the body. The disturbances, therefore, which occur after lesions of the semi-circular canals are due—1st, To a visual vertigo produced by a disagreement, the space seen, and the ideal space originally conceived through the agency of the sensations developed in the normal condition of the canals; 2d, to the false notions which result from a confused and incorrect judgment as to the position which the body occupies in space; and 3d, to the disorders of the distribution of force in the muscles. This explanation is as original as it is plausible, and should it prove susceptible of positive demonstration, it will serve not only to enlarge the area of positive physiological knowledge, but to throw light upon certain problems in cerebral pathology which have heretofore remained obscure.—Edward Warren (Bey), M.D., C.M., in the Paris letter of *North Carolina Medical Journal*, No. 3, vol. i. p. 175.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., F.R.C.P., Lecturer on Diseases of the Skin,
Edinburgh School of Medicine.

DERMATITIS EXFOLIATIVA OF INFANTS AT THE BREAST.—The affection described under this name has been observed at the Foundling Hospital at Prague. It manifests itself almost exclusively during the first days or weeks of life, and terminates fatally in half the cases. After a prodromal period solely characterized by furfuraceous desquamation, or rarely by that of scales of epidermis, the erythematous stage supervenes. The redness appears at first on the lower half of the face, and extends successively or simultaneously over nearly the entire integument; fissures arise at the same time at the labial commissures, and small losses of substance, covered by a white deposit, are seen in the majority of cases on the palatal mucous membrane. Up to this point the infant is not feverish, continues to take the breast, digests well, and increases in weight. Exfoliation follows; the epidermis raised up by a very fine layer of exuded fluid appears folded. It is macerated, softened, and breaks, leaving large surfaces red and denuded from the separation of large flakes. These surfaces look as if scalded, eventually dry up, and now assume a reddish brown colour, and are again covered with thin crusts, more or less adherent. It is not rare that the hands and feet are entirely deprived of skin, but in general the lower limbs are less affected than the upper and the trunk. Less marked and abortive forms are met with, which, at least at their commencement, remind one of miliaria, eczema, or pemphigus. After the drying up of the denuded surfaces there is in general a secondary desquamation. The disease runs a course of seven or ten days. It is not uncommon to observe as a sequela the development of eczema, or more frequently still of very numerous boils. This last complication increases seriously the gravity of the prognosis; it leads sometimes to the formation of extensive suppuration, and even of gangrene. No characteristic visceral change has been revealed by the autopsies. Direct contagion does not occur.—*Ritter v. Rittershain, Centralzeit f. Kinderheilk*, 1878, No. 1; and *Revue des Sciences, Médicales*, 15 Juillet 1879.

URTICARIA PIGMENTOSA.—A case of this interesting disease is recorded by Dr Morrow, which he had for a long time under observation. The eruption began when the child, a well-nourished, healthy male, was six months old. It began by the appearance of a few small reddish pimples on the back and chest, succeeded by elevated spots scattered over the face and entire body, ordinarily pale yellowish, but changing to a reddish or bright scarlet hue when the child cried or became excited. When two years old, after an

urticarial attack, which took place at variable intervals,—about once a week in warm, less often in cold weather,—small crops of pinkish red tubercles came out, varying in size from a coffee grain to an almond, which as they grew older assumed a pale yellowish or brownish colour. They were firm to the touch, had often a pearly lustre, but did not contain fluid. The average duration of each was from one to three weeks. When three years old the trunk was almost entirely covered with these pigmented spots, the limbs not so completely, and they were found even on the mucous membrane of the palate and fauces. The least excitement produced intense hyperæmia of the surface, and the skin was very markedly hyperæsthetic. The temperature of the skin when actively hyperæmic was raised from two to three degrees. Pruritus was a constant symptom. There was no history of any skin disease in either the father or mother's family. Treatment had so far proved unsatisfactory, as the spots were much more numerous at the age of four than they were two years previously. The case presents many points of similarity with those five recorded at intervals by Nettle-ship, Morant Baker, Tilbury Fox, Barlow, and Sangster. The urticarial element is the salient feature, while the frequently recurring active hyperæmia with exudation leads to permanent nutritive disturbance, manifested by increase of structure and pigmentation.—*Archives of Dermatology*, January 1879.

INTERMITTENT URTICARIA.—The complication of urticaria with intermittent fever is, in Professor Zeissl's experience, an extremely rare one. Hebra, during twenty five years, in 500 cases of urticaria has never met with it; nor, hitherto, Zeissl, among 200 cases of urticaria in private practice. Zeissl's case occurred in the person of a strong woman, aged twenty-five, living at home, who complained of severe itching of the skin during the third attack of ordinary intermittent fever of the tertian type. On inspection, the trunk and extensor and flexor surfaces of the extremities were covered with numerous wheals, which sometimes reached the size of a pigeon's egg. The urticaria disappeared completely with defervescence. The patient suffered fourteen times from the paroxysms of ague; and all, with exception of the last, were accompanied by the eruption of wheals. She had never previously suffered from urticaria, nor has since. Voelcker adds that during the Franco-Prussian war in 1871, in the person of a German soldier, he met with an eruption of urticaria perfectly intermittent, assuming the tertian form, and accompanied by considerable splenic enlargement. Although all symptoms of fever were wanting, Voelcker assumed a malarial origin, as in the place (Senlis, near Paris) there were numerous cases of ague, and accordingly prescribed quinine with good results.—*Schmidt's Jahrbücher*, No. 5, 1879.

TREATMENT OF NÆVUS BY MULTIPLE SCARIFICATIONS.—The value of this mode of treating port-wine mark, in-

troduced by Mr Squire, is still undecided. In favour of it is the experience of M. Vidal (*Annales de la Société Méd. et Chir. de Gand.*, 1878), who has removed from the face and body various abnormal growths by means of scarification. Large nævi diminished in size and small ones disappeared under this treatment, from obliteration of vessels and cicatricial formations. After the fourth scarification, and at times earlier, the part operated on appears of a rosy instead of a purplish red colour, as before. Next, small islets form in the nævus, which soon assume the colour of healthy skin. Best of all, the scarified tissues show often, after complete cure, no sign of a scar. For the operation Vidal recommends small lancet-shaped needles, with which several incisions, 1-1½ mm. in depth, are to be made. Deeper incisions may give rise to scars. The scarifications should be parallel and 2 mm. apart, and new ones should be made, parallel with the earlier ones, as soon as these latter have healed. Small nævi may be cured in one sitting; larger ones, especially on the face, need several. The drawbacks are pain and bleeding. For the former local anæsthesia may be employed, and even this is not always needed. For the bleeding, touchwood or German tinder may be used; liq. ferri is but rarely required. When the bleeding has ceased it is well to wash the parts with a fine moist brush, to prevent clotting in the incisions. Vidal has in several cases needed twenty sittings for a single nævus, and considers that the result more than compensates him for the time and trouble (*Archives of Derm.*, April 1879). Against the success of the method is the experience of Dr Piffard, who stated at the meeting of the New York Dermatological Society in September 1878 that, in the case of a child aged twelve, affected with port-wine mark, operations according to Squire's mode had been followed by the development of keloid, producing a greater disfigurement than the original disease. Mr Malcolm Morris gave an account of three cases treated in this way in the Dermatological Section of the British Medical Association in August last. All were unsuccessful. One was operated on 130 times with the reverse of improvement, a keloid growth having formed. Dr McCall Anderson corroborated this opinion, and stated that in his experience the method was valueless in the treatment of port-wine mark.—*British Medical Journal*, 23d August 1879.

THE TREATMENT OF ANEURISMS BY ELECTROLYSIS.

SEVERAL cases of aneurism treated by electrolysis have lately been published, of which the following is an abstract:—

CASE 1.¹ *Aneurism of Ascending Portion of Aortic Arch; Death.*—

¹ Histoire de trois cas d'anévrysme de l'aorte thoracique traités par la galvano-puncture (storia di tre aneurisme dell'aorta toracica curate colla galvano-puntura), par le Dr Ottoni Gregorio, *Annali Universali di Medicina et Chirurgica*, Nov. 1878, p. 442.

Male, æt. 49, admitted to the hospital, Mantua, 18th September 1876, suffering from a large aneurism of the ascending portion of the thoracic aorta. Iodide of potassium, and afterwards arsenic, having been tried, but without benefit, it was decided to have recourse to electrolysis. The first operation was performed on 12th February. Ciniselli's battery, twenty-four elements, charged by a four per cent. solution of sulphuric acid, was used. Three needles were inserted into the sac, one to the left and two to the right of the sternum, in the third interspaces. The operation was continued for forty minutes. Nothing noteworthy occurred during the operation. For several days after the operation there was some local œdema. The patient, however, felt better. The breathing continued for some days to be easier, then the dyspnœa returned, and became greater than before. A second operation, conducted in the same manner as the first, was performed in the middle of March, but without any relief, the patient dying four days afterwards. The post-mortem showed a large aneurism, involving the whole of the ascending portion of the aortic arch and the innominate. The diameter of the sac was, from before backwards 7 centimetres, vertically 10·5 centimetres, transversely 10 centimetres. The walls of the sac, which were of considerable thickness, but inelastic, appeared to be formed by the two outer coats. The greater part of the interior of the sac was covered by fibrinous clots. The thickest part of the clot measured 2 centimetres, and corresponded to the parts of the sac which were adherent to the sternum in front and to the trachea behind. The outer layers of the clot were dense and yellow, the inner layers soft and fleshy. Traces of the needles were seen in the clot which lined the anterior surface of the sac.

CASE 2.¹ *Aneurism of the Descending Portion of the Thoracic Aorta.*—B. —, æt. 45, who had suffered both from rheumatism and syphilis, was thrown from a carriage in the year 1875, and received a fracture of the thigh. Some months afterwards he began to complain of pain in the region of the sixth and seventh ribs. In March 1876 the patient was admitted to hospital. A soft pulsating tumour, measuring 4 centimetres in diameter, projected on the left side of the spinal column, between the third and seventh ribs. Galvano-puncture was performed on the 10th of March. The same battery was used as in the preceding case. The strength of current was sufficient to generate 2 cubic centimetres of gas (by electrolysis) in five minutes. Three needles were inserted into the middle of the tumour, at a distance of 2 centimetres from each other. The operation lasted forty-five minutes. There was a little bleeding from one of the punctures. No improvement following the first application, a second galvano-puncture was performed six days afterwards. Four needles were inserted. Ten days afterwards there was a marked increase in the size of the

¹ *Ut ante.*

tumour, the lower part of the sac becoming very thin and threatening to rupture. After an interval of twenty days a third operation was performed. Five needles were inserted. The strength of current was sufficient to generate 3 cubic centimetres of gas (oxygen and hydrogen) in five minutes. The operation was followed by considerable local and general disturbance. The patient died six days afterwards. The tumour was of large size. The left pleural cavity contained a large quantity of blood. The walls of the sac were firm, and blended with the pulmonary pleura. The vertebræ were eroded, and the spinal canal opened into; the fifth, sixth, and seventh ribs partly destroyed. The aneurismal sac contained a clot, which was partly stratified and partly coloured. The sac had ruptured, forming a false aneurism, which was filled with soft clot. The author considered the soft clots in the sac and in the false aneurism the result of the electrolysis. They were not stratified, and had a peculiar amorphous appearance.

CASE 3.¹ *Aneurism of Transverse Portion of Aortic Arch; Great Improvement; Disappearance of the Tumour.*—Sq. C., æt. 36, admitted April 1876, suffering from dyspnœa. There was a well-marked tracheal stridor. A dry cough developed soon after admission. A pulsating tumour was situated in the supra-sternal notch. It extended on the right side to the inner border of the sterno-mastoid; on the left to the sterno-clavicular articulation; its superior limit was a point 7 centimetres below the hyoid bone. The pulsation in the sac was systolic, and was attended with a soft murmur. The diagnosis was an aneurism of the transverse portion of the aortic arch. From 30th May to 8th June a galvanic current was passed through the sac. On 10th June the operation of galvanopuncture was performed. Three steel needles were inserted into the sac to a depth of from 2 to 3 centimetres. The same battery as in the previous cases was used. The strength of the current was sufficient to generate 1 cubic centimetre of gas. The direction of the current was reversed six times. The operation lasted thirty-five minutes. Cold was applied over the sac for thirty-six hours afterwards. There was no local reaction. For some days the patient was easier, then there was a sudden relapse of the symptoms. A second operation was performed twenty-eight days after the first. Twenty elements were used, giving a current which produced 3 cubic centimetres of gas in five minutes. There was no inflammation in the sac. For fifteen days there was neither dyspnœa nor pain. During this time the tumour decreased considerably. Then the dyspnœa returned, together with pain in the neck, which radiated to the head and shoulders. On 9th July there was high fever, 40°·2 C., and an attack of right-sided pneumonia. Still the tumour continued to decrease. Soon the dyspnœa and pain disappeared. The patient left the hospital on 4th October. At the

¹ *Ut ante.*

time of his discharge, pulsation could be felt when the finger was depressed behind the right clavicle, and a murmur was still present at this point. On 10th November the improvement continued.

Note.—The position of the pulsating tumour in this case suggests it being innominate, and not aortic.

CASE 4.¹ *Aneurism of Ascending Portion of Thoracic Aorta; Great Improvement.*—"At the meeting of the Académie de Médecine on 21st January 1879, Dr Bucquoy communicated the following interesting observation:—The patient was a woman aged 58 years, in whom suddenly an aneurism of the ascending aorta had developed itself. Two years later pulsations could be detected in the tumour, which bulged out considerably on the right side of the thorax, and spread over the second, third, and fourth intercostals, completely covering the ribs and their cartilage, so that they could no longer be felt. Seeing the eccentric and lateral position of the aneurism, and urged by the impending peril, M. Bucquoy resolved to try Ciniselli's electrolytic treatment for aneurisms. The first sitting took place on the 12th of June 1878. Dr Dujardin Beaumetz assisted, and the operation was carried out according to his modified proceeding. Two needles were plunged into the most prominent parts of the tumour to the length of $2\frac{1}{2}$ centimetres, and brought alternately into contact, during five minutes, with the positive pole of a Gaiffe's pile, the negative pole of which was applied to the patient's thigh. The current was allowed to pass through her body for about twenty minutes. During the operation she complained of very violent pains, which were followed by an inflammatory tension of the tumour, making the latter very painful to pressure. But at the same time the general and functional troubles were lessened, the dyspnoea had decreased, and the patient could sleep. A fortnight later, a second sitting was followed by the same phenomena, but the tumour collapsed markedly. After three more operations it had almost become solid, and the patient was well enough to leave the hospital and return to her work. Two months later she again presented herself, complaining of a general feeling of lassitude and of shortness of breath. The aneurismal sac again increased in size, but was not nearly as large as when first seen. Four more sittings were then held, and finally succeeded in reducing the aneurism to its present state. The bag has collapsed, and forms a hard lump, which does not give way under pressure, and is of a fibrous consistency. At the upper end there is a small pointed prominence of the size of a small nut, which pulsates very strongly. The cure is not complete, but there is no doubt as to the possibility of completing it. M. Bucquoy concludes from this and many other cases that electrolytic treatment may prove extremely useful in cases of

¹ *London Medical Record*, May 1879, p. 177.

sacciform aneurisms, adherent to one portion of the coat of the aorta only."

(To be continued.)

Part Fifth.

MEDICAL NEWS.

PERTHSHIRE MEDICAL ASSOCIATION.—A preliminary meeting of the medical profession of the county was held some time ago, to consider the propriety of forming a Medical Association for Perth and surrounding district. It was unanimously agreed that such an association should be formed, and rules were approved of for the conduct of its affairs. The first monthly meeting of the Association was held in the directors' room in the Infirmary on Friday last, when the following were elected office-bearers:—Dr Frew, president; Dr Robertson, Stanley, vice-president; Dr Baird, secretary; Dr Graham, treasurer; and Drs Bramwell, Nairne, Irvine (Pitlochry), Morrison (Dunning), F. H. W. Laing (Bridge of Earn), members of Council. A paper was then read by Dr Bramwell on nerve-stretching in sciatica, with cases. As already over one-half of the members of the profession in the county have become members, the success of the Society seems assured.

THE examination for the Army Medical Department, which was announced to be held in September, has, we understand, been postponed, pending the consideration by the Treasury of the new warrant. It is hoped by the War Office authorities that the Treasury decision may be given in time for an examination to be held before the next session of the Army Medical School at Netley.

PUBLICATIONS RECEIVED.

- E. BRASSEUR.—Études de chirurgie dentaire. J. B. Baillière et Fils, Paris, 1879.
- RICHARD CARTER, M.D.,—Tunstall on the Bath Waters. J. & A. Churchill, London, 1879.
- Contribuzione alla Climatologia Medica della Sicilia. Del Dott. G. B. Ughetti. Tip. Salvatore Meccio e Co. Palermo, 1879.
- AUSTIN FLINT, M.D.,—Clinical Medicine. J. & A. Churchill, London, 1879.
- GORDON HOLMES, L.R.C.P. Edin.,—A Treatise on Vocal Physiology and Hygiene. J. & A. Churchill, London, 1879.
- Hygiene and Public Health. Edited by Albert H. BUCK, M.D. 2 vols. Wm. Wood & Co., New York, 1879.
- E. KLEIN, M.D., F.R.S., and E. NOBLE SMITH, L.R.C.P., M.R.C.S.,—Atlas of Histology. Part VII. Smith, Elder, & Co., London, 1879.
- ÆNEAS MUNRO, M.D.,—Deaths in Childbed and our Lying-in Hospitals. Smith, Elder, & Co., London, 1879.
- HENRY POWER, M.B., and LEONARD W. SEDGWICK, M.D.,—New Sydenham Society's Lexicon of Medicine and the Allied Sciences. Part II. New Sydenham Society, London, 1879.
- Transactions of the Medical and Chirurgical Faculty of the State of Maryland. Eighty-First Annual Session.
- Transactions of the Medical Society of the State of New York for 1879.
- L. TURNBULL, M.D., Ph.G.,—The Advantages and Accidents of Artificial Anæsthesia. Lindsay & Blakston, Philadelphia, 1879.
- A. L. VAGO.—Phrenology Vindicated. Simpkin, Marshall, & Co., London, 1879.
- G. E. WALKER, F.R.C.S.,—Essays on Ophthalmology. J. & A. Churchill, London, 1879.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Statistical Report of Results of Operations Performed by PROFESSOR SPENCE in his Department of the Edinburgh Royal Infirmary, from October 1876 till May 1878.*

THIS report consists of three parts:—

1. A general statistical table giving a view of the numbers and results of the different operations.
2. An epitome or brief histories of the cases in which the operations were performed.
3. Some remarks on the treatment and results in reference to the cases operated on.

The second part, which I was most anxious to give fully, to enable the reader to judge of the character of the cases operated on in relation to results, is by no means so full or perfect as I could have wished, for I found that the abstracts from the Hospital journals did not in many instances afford me such histories of cases or clinical observations as would have been desirable. The desire to amend this as far as I could has led to the delay in publishing these statistics till now. The epitome of cases, as regards the amputations and excisions of joints, will be found as complete as I could make them; but I found it incompatible with my other professional avocations to attempt the same work in reference to the other operations, though many of them were of great interest. Some of them, however, will be found referred to in my general remarks.

To save repetition, I may state that, except when specially noticed, the dressings employed were either the boracic lotion dressing, as described in my Statistical Report published in 1876, or the carbolized oil dressing mentioned in that report. In only one case, that of amputation of the hip, was the “spray” method used.

In regard to the excisions of joints, those at the shoulder were performed by single internal longitudinal incision, with a small counter

opening for drainage; in ordinary excisions of the elbow, a single dorsal longitudinal incision. In resection and excision of the articular and condyloid portion of the humerus, the operation was effected by two lateral incisions, so as to admit of the resection of the humerus by the narrow saw, the division of the condyles by the bone-pliers, and more easy removal of the fragments, and free drainage. In excisions at the hip, a slightly curved incision, about four inches long, over the back part of the great trochanter, was the method used; and excisions of the knee, I have hitherto invariably used a slightly curved transverse incision.

GENERAL TABLE OF OPERATIONS AND RESULTS, FROM OCTOBER
1876 TO OCTOBER 1877.

TABLE I.—*Amputations.*

	Total.	Recovered.	Died.
Upper Extremity—			
For Injury—At shoulder-joint—Secondary, . . .	1	1	0
Through—Upper arm—Secondary, . . .	1	1	0
For Disease—Partial amputation of hand, . . .	1	1	0
	—	—	—
Total amputations of upper extremity, . . .	3	3	0
Lower Extremity—			
For Injury—Double amputation of legs—Primary, . . .	1	1	0
At ankle—Primary,	1	1	0
At ankle—Secondary,	1	0	1
For Disease—At hip-joint (malignant tumour), . . .	1	0	1
Through thigh,	4	4	0
Through leg, for disease of ankle and tibia, . . .	2	2	0
At ankle—Disease of tarsus,	6	5	1
Partial, of foot,	2	2	0
	—	—	—
Total amputations of lower extremity, . . .	18	15	3
	—	—	—
Grand total of amputations,	21	18	3
	—	—	—

TABLE II.—*Excision of Joints.*

Upper Extremity—			
For Injury—Shoulder—Secondary,	1	1	0
For Disease—Shoulder,	1	1	0
Elbow—For result of injury,	4	3	1
For disease,	4	4	0
Wrist—Partial excision of lower articular end of radius, . . .	1	1	0
	—	—	—
Total excisions of upper extremity,	11	10	1
	—	—	—
Lower Extremity—			
or Disease—Hip-joint,	3	2	1
Knee,	1	1	0
	—	—	—
Total excisions of lower extremity,	4	3	1
	—	—	—
Grand total of excision of joints,	15	13	2

TABLE III.—*Excisions of Tumours.*

	Total.	Recovered.	Died.
Excision of breast for cancer,	9	9	0
„ gummatous tumour of breast,	1	1	0
„ large, deep-seated tumours of neck,	4	3	1
„ frontal papilloma,	1	1	0
„ parotid tumour,	1	1	0
„ upper jaw,	1	1	0
„ lower jaw,	1	1	0
„ half tongue (epithelioma),	1	1	0
„ sublingual epithelioma,	1	1	0
„ large labial and facial epithelioma,	3	2	1
„ large bronchocele,	1	0	1
„ large ovarian tumour,	1	1	0
„ cystic tumour on thorax,	1	1	0
„ large hæmatoccele cyst from perineal and gluteal region,	1	1	0
„ large mixed fatty and myxomatous tumour from sacral region (infant),	1	1	0
	<hr/> 28	<hr/> 25	<hr/> 3

TABLE IV.—*Operations on Bones.*

Subperiosteal resection of upper half of tibia for acute necrosis,	2	2	0
Removal of large sequestra,	6	6	0
For badly united fracture of femur,	1	1	0
Trephining—Elevation and removal of a large portion of frontal bone for depressed fracture of skull,	1	1	0
	<hr/> 10	<hr/> 10	<hr/> 0
Total operations on bones,	10	10	0

TABLE V.—*General Operations.*

Gastro Intestinal System—			
Colotomy,	1	1	0
Strangulated femoral hernia, 8 months pregnant,	1	0	1
Umbilical (female),	1	1	0
Genito Urinary System—			
Lithotomy (males),	5	5	0
Perineal section,	3	2	1 ¹
	<hr/> 11	<hr/> 9	<hr/> 2
Total operations performed,	85	75	10

EPITOME OF CASES.

Amputations—Upper Extremity.

CASE 1. *Secondary Amputation at Shoulder-Joint.*—James R., ætat. 45. Patient admitted with a compound comminuted fracture at the shoulder, caused by the fall of a mass of coal. On examining him on the 25th May, four days after the accident, I found the capsular ligament opened, and the head of humerus fissured. I then enlarged the wound, and excised the head and tuberosities, and resected the broken shaft, so as to remove the denuded and splintered portion. For a time he pro-

¹ See Remarks.

gressed favourably, but afterwards an unhealthy state of the limb supervened, necessitating amputation of the limb on the 28th of July. He was discharged cured, 13th September. The shaft of the humerus was found affected by a low form of inflammation, soft and carious-looking, a condition similar to what occurs in some cases of gunshot wounds.

CASE 2. *Secondary Amputation for Extensive Burn of Hand and Forearm.*—John M., ætat. 15. The limb had been bruised between two heated cylinders in a paper manufactory. As the circulation was good, and the extent to which the true skin might be affected uncertain, the limb was treated by suspension in warm bath of very weak carbolized water. Under this treatment the constitutional symptoms and pain kept moderate. When the sloughs separated, however, it was found that, from the extensive destruction of skin and fascia on both aspects of arm, there was no hope of saving a useful limb. The arm was accordingly amputated at middle third, and the lad made a rapid recovery, the stump healing almost entirely by primary union. When convalescing he had an attack of diarrhoea, and symptoms somewhat resembling typhoid fever, but without any characteristic eruption. This passed off, and he rapidly regained strength.

CASE 3. *Partial Amputation of Hand for Disease of Metacarpus in an Old Man.*—William M'L., stating his age at 58, but apparently 20 years older, was sent to my care from Caithness. On admission I found the hand much swollen, both on the palmar and dorsal aspects. The whole hand, with the exception of the thumb, was of a dark purple colour, with some ulcerated openings, from which thin purulent matter of a peculiarly offensive odour was discharged. The patient could not give any explanation as regarded the cause of the disease, but his general health seemed much broken down. After enlarging the existing openings, and removing some sloughing tissue, I directed charcoal paste to be applied previous to amputating the diseased metacarpal bones, which were those of the middle and ring fingers. Subsequently partial amputation of the central portion of the hand was performed, cutting through the metacarpal bones close to their articulation with the carpus. The cure was of course by secondary union, and rather tedious, but his general health gradually improved, and he was discharged cured. From the appearance of the patient and history, I should not be surprised should other bones become affected.

Amputations—Lower Extremity.

CASE 4. *Amputation at Hip-Joint.*—David M., ætat. 26. Enormous medullary tumour of left femur. When admitted the patient was extremely emaciated. The tumour had existed for about five years, and he had been repeatedly advised to submit to amputation; the rapid growth of the tumour about three months before admission, accompanied by emaciation and weakness, at last

made him desirous of having the limb removed. He had recently suffered from a pleuritic attack, and there was mitral murmur heard at the apex of heart. The case was most unfavourable; but as it seemed to be his only chance, he was anxious to have the operation performed. The size and character of the tumour left no choice but to amputate at the hip-joint, and one unfavourable condition was the enormous size of the veins of the affected limb, and of the left side of the abdomen. The veins of the right lower extremity were also affected. I performed amputation at the hip-joint on the 23d of May. I applied a circular compressor immediately above the tumour, and then the elastic bandage up to and round the hip, and finally compressed the abdominal aorta by means of a pad and elastic bandage around the abdomen. I operated by my usual method of anterior and posterior flaps. There was little loss of arterial or venous blood, as from the size of the vessels their mouths were easily seen and secured before removing compression. The operation, at the request of some of the patient's friends, was performed under strict antiseptic precautions, as they had been given to understand that that method precluded all danger! The patient rallied after the operation, and continued to go on favourably, without any oozing of blood or much sickness; but next morning he suddenly began to fail, and died on the day following the operation.

CASE 5. *Amputations of Thigh.*—*Amputation through Thigh for Disease.*—Maggie M'Q., æt. 9. Admitted 3d November 1876, suffering from great degeneration of right knee. Two sinuses. Carbolyzed water lint applied until 21st November, when amputation was performed through lower third of thigh. Dressed alternately with carbolic and boric lotions until 30th November, when, owing to sloughing, charcoal paste was applied. Ultimately boracic ointment was applied. Patient dismissed cured, 18th January 1877.

CASE 6.—William S., æt. 36. Admitted 21st August 1876. Disease of knee. Swelling commenced about nineteen years previous to admission, but neither pain nor swelling so severe as to hinder patient from carrying on his usual occupation of a fisherman, until the April, when, owing to a blow, both swelling and pain were so much aggravated as to necessitate his taking advice, when he came to my wards in the Edinburgh Royal Infirmary. On examination of the knee I found it greatly swollen and very painful, the pain extending up to the hip-joint. General health good. I ordered iodide of potassium to be administered internally, and hot water fomentations to the joint. I performed my own operation for amputation through the condyloid portion of femur on 5th October, when I found the knee-joint thoroughly disorganised, the patella and articular surfaces of both tibia and femur diseased, and a large cavity in the external condyle containing a piece of necrosed bone. After the operation I had the stump dressed with

lint steeped in boracic lotion. On the evening of operation the temperature rose 101° , when 20 grains quinae sulph. were administered, but the temperature went on increasing until the second day after operation, when it had reached—morning, 104° ; evening, 103° . Pulse in the morning of same day, 128. I again administered 20 grains of quinine, and ordered 5 grains thrice a day, which had a beneficial effect. On the evening of the third the stump required to be taken down owing to hæmorrhage; this again raised the temperature to—morning, 104° ; evening, $102^{\circ}4$; pulse morning, 132; however, after this he gradually improved. Abscesses were found in the thigh afterwards, and were freely incised and drained by counter-opening, and dressed with lotion sodæ chlor. Patient went on steadily improving, and was sent to the Convalescent House on the 4th of January 1877, cured.

CASE 7. *Amputations through Thigh.* — Harry C., æt. $2\frac{3}{4}$. Admitted 5th October 1876. Gelatinous degeneration of left knee. Swelling noticed nine months previous to admission, attended with considerable pain. Some time afterwards an abscess formed on the external aspect of the limb, burst, and continued suppurating, affecting the health to such an extent that it was deemed advisable to bring him to my wards. On admission the leg was flexed, swollen, and glazed. A sinus opened over the internal condyle, which passed into the femur, communicating with necrosed bone; there was great pain on pressure or movement, and the child was so feverish and excitable that I considered amputation absolutely necessary, which I accordingly performed on the sixth day after admission, the operation being through the condyloid portion of the thigh by a long anterior flap. The wound was dressed with boracic water lint, and everything went on favourably, the patient being dismissed cured on 10th January 1877.

CASE 8. *Amputation of Thigh for Gelatinous Degeneration of Knee.* — Wm. F., æt. 5. The disease was first noticed about September 1874. Admitted 19th February 1877, when there were found to be two large abscesses on the knee; these were tapped by an aspirator two days after admission, and two days afterwards an incision was made to lay open the cavities and remove the clots; they were then dressed with carbolic lotion. Nine days after admission the temperature rose to $99^{\circ}4$ and the pulse to 104 . There was also a trace of albuminuria, the specific gravity of the urine being 1015. Amputation above the knee was performed on the 14th of March, and the stump dressed with boracic acid lotion. The stump healed well, and the patient was sent to the Convalescent House cured, 19th April 1877.

CASE 9. *Amputations of both Legs—Double Primary—Railway Injury.* — Admitted in consequence of severe compound comminuted fracture and laceration of both legs. The patient, who was intoxicated at the time of the accident, had tried to pass a low level crossing and fell, and the train passed over both legs, crushing and nearly

severing them a little below the middle. He had also received a blow on the left side of chest, and an injury of the scalp with slight cerebral concussion. Dr Bentley, of Kirkliston, who accompanied him, had arrested the hæmorrhage, and had him carefully transported to the Infirmary. On examination I found that there was sufficient healthy skin to enable me to amputate both limbs below the knee, and this was done by the modified circular method. The wounds were closed by a few points of suture, and dressed with lint soaked in carbolized oil. An opiate was given. He bore the operations well. Next day, as reaction had commenced and some headache, I directed ice to be applied to the head and a broad bandage round the chest. On the second day the margins of the skin flaps seemed doubtful. I removed the stitches, and, finding the muscular and fascial textures rather sloughy, the wounds were left open and dressed with charcoal paste supported by lint soaked in carbolized oil, and quinine in full doses was given internally, as there was rise in temperature. Subsequently symptoms of limited pleuritis corresponding to the injured part of thorax supervened, but yielded to the local application of sinapisms, cataplasms, and gentle purgatives. Sloughs separated from the deep parts of the stumps, but the skin did not slough to any extent; the wounds assumed a healthy granulating appearance, and gradually healed by contraction, leaving good stumps. The patient was discharged in wonderfully good condition, having apparently suffered but little either mentally or bodily from his severe injuries.

CASE 10. *Amputations through Leg for Disease.*—Isabella T., æt. 16. Admitted 4th January 1877. Strumous disease of leg. This patient was formerly in my wards, when amputation was performed at the ankle-joint; but the disease recurring, she was again admitted. On examination I found an abscess had formed in the medulla of the tibia. I trephined and gave free exit to the discharge, which, being excessive, caused such a drain on the patient's system that I began to fear the result would be fatal if the discharge was allowed to continue. I accordingly amputated about four inches below the knee. There was a good deal of oozing, and consequently I had the stump taken down, the clots removed, and followed my usual method of dressing with lint steeped in boracic lotion. The patient made an excellent recovery, and was discharged from hospital on 19th April 1877, cured.

CASE 11.—Mary M., ætat. 40. This patient was admitted in a very exhausted state, having suffered for a long time from disease of ankle-joint. On admission I found the ankle, heel, and surrounding soft textures quite disorganized, and the lower part of tibia was felt bare. It was evident that the state of parts did not admit of amputation of the ankle, and accordingly I amputated at the junction of the middle and lower third of leg, by long posterior flap by

transfixion. The flaps were united by sutures, and the stump dressed with lint soaked in boracic lotion, placed on a splint, and swung. The wound healed completely in three weeks by first intention, except where the drainage-tubes were placed. After the flaps united, a small abscess formed higher up in front, but healed rapidly after being opened. The stump was a very perfect one.

CASE 12. *Amputations—Ankle-Joint, for Injury—Primary.*—Henry H., ætat. 16. Admitted on the 25th August for injury of foot. The foot had been severely crushed and lacerated by a railway truck passing over it. As the textures of the heel had escaped injury, amputation at the ankle-joint was immediately performed. The stump was dressed with boracic lotion, and drainage employed. The patient progressed most favourably, and was discharged cured on 27th September.

CASE 13. *Secondary Amputation for Railway Injury of Foot.*—John A. In this case the wheel of the carriage had passed obliquely over the foot, and the appearance of injury and laceration was so slight that it was not considered necessary to send for me. Next day, at visit, when I saw the patient, I heard how the accident had happened. I examined the foot carefully, and having satisfied myself that the deep-seated textures had suffered extensively, I recommended amputation. There was some ecchymosis near the ankle; but as the posterior tibial was felt pulsating, I performed amputation at the ankle, and dressed with carbolized oil. At first all seemed going on favourably; but on examining the stump on the second day after amputation I found the heel-flap evidently dead, and some infiltrated swelling of the leg above the ankle. I at once cut off the dead flap and touched the cut surface with strong carbolic solution, incised the infiltrated swelling freely, and had the parts (after washing them with carbolic solution) enveloped in charcoal paste, whilst internally quinine was given in large doses. As I was leaving town at this time, I did not see the patient again; but he gradually sank, apparently from the septic poisoning, on the 12th April 1877.

CASE 14. *Amputations at Ankle for Disease.*—Bernard B., ætat. 10. Admitted 4th June. Disease of ankle-joint and tarsal caries of nearly eight years' standing, much emaciated, and affected with ulcerated femoral glands of the affected limb. Amputation at ankle-joint 20th June, after his general health had been improved by nutrient diet. The stump, dressed with boracic lotion, healed well and rapidly, and he was discharged in good health on the 2d of August.

CASE 15. *Gelatinous Disease of Ankle-Joint.*—James R., ætat. 3. A very weakly, irritable child, emaciated and with enlarged mesenteric glands. The stump healed, though slowly, owing to attacks of bronchitis and his weak state. When the stump had healed he was attacked by diarrhœa, and ultimately died, exhausted by tabes mesenterica.

CASE 16.—Alexander B., ætat. 6. In this case excision of the astragalus had been performed some months before, but the wound had never healed; and as other tarsal bones had become affected, and also the lower tibio-fibular articulation, I performed amputation at the ankle on the 18th of July. Owing to the state of soft parts forming the flap, the healing was slow, but he was discharged cured on the 19th of September, with a good stump.

CASE 17. *Amputation at Ankle.*—John R., ætat. 11. Admitted 16th October 1876. Necrosis of bones of foot. Swelling first noticed about four years previous to admission, breaking and forming a sore about six months before coming to my wards. General health good. On examination I found three sinuses communicating with diseased bone; and as there was no hope of saving the foot, I amputated at the ankle by the internal flap method. The stump was dressed with boracic dressings, and he went on steadily improving until 4th January, when he was sent to the Convalescent House cured.

Partial Amputation of Foot.

CASE 18. *Amputation through Metatarsus for Spontaneous Gangrene of Toes.*—Alex. D., ætat. 37. This patient, a man apparently in good general health, was admitted for gangrene of all the toes of left foot. He could give no clear account of the commencement of the affection, for he had been for several days in a state of extreme “alcoholism,” to use a modern euphemism. He stated that he had put on a pair of new boots before he began his debauch, and that he never had taken them off for some days, and the only thing he recollected was, that on becoming somewhat sober he found his foot uneasy, and on the boots being taken off the foot was swollen and the toes discoloured, and that they gradually became black. I waited until a line of demarcation formed, and then amputated at the middle of the metatarsus. The patient made a good recovery.

CASE 19. *Partial Amputation of Foot.*—Cath. M'K., ætat. 49, married. Tertiary syphilis. Admitted 10th January 1877. Disease first noticed about fourteen years ago, after the birth of her seventh child, when sore throat and hoarseness set in and lasted for about a year. During this period her general health was greatly impaired, and she had great pain in and swelling of the joints, but no eruptions. About three years after the throat had been first affected, the feet began to swell, and a series of ulcerations took place. These healed in about two years. Three months after the birth of her eleventh child, her left leg broke out and has never since healed. On admission there were numerous sores on knee and toes of left limb, the skin was much thickened, and the extensor tendons of toes completely destroyed, the foot presenting an appearance similar to leprosy. The sores were dressed with charcoal; and liquor arsenicalis combined with the iodide and bromide

of potassium, administered internally. Partial amputation of the foot was performed on the 7th of February, the wound well washed out with solution of chloride of zinc, and dressed with charcoal. The wound healed well; the patient made a rapid recovery, and was dismissed much improved in her general health. Dismissed 3d May 1877.

30th November 1878.—This patient has been again under my care for a serpiginous ulcer of the right thigh, but the stump of the left foot is perfectly healthy.

Excisions of Joints—Upper Extremity.

CASE 1. *Shoulder-Joint—Secondary, for Injury—Excision of Head of Humerus.*—James R., æt. 45. This case is recorded amongst the amputations, as amputation was ultimately necessitated owing to necrosis of shaft of the bone and profuse discharge. Recovery.

CASE 2. *For Disease.*—Eliza R., æt. 1 year. This infant was sent to my care by Dr Scott of Musselburgh, on account of abscess over the shoulder-joint. On opening the abscess, the shoulder-joint was found implicated in the diseased action, which, however, chiefly affected the head and tuberosities of the humerus. Feb. 22, the head of the humerus was removed by resection through the surgical neck of the bone, and the diseased part of the capsule removed. The glenoid cavity was healthy. The child made a steady though not rapid recovery, and was discharged cured 11th May 1877.

CASE 3. *Excisions—Secondary, for Injury—Excision of Lower End of Humerus at Elbow; Ultimately Amputation of Arm.*—Kerr E., æt. 40. Admitted 8th October 1876. Ten years previous to admission, patient fell from a height of 32 feet upon his side, dislocating his right elbow and fracturing the humerus. When admitted the arm was ankylosed in the straight position, though pronation and supination still continued in some degree. The arm being comparatively useless, and the patient anxious that an operation should be performed, excision of the lower articular end of the humerus was had recourse to. Two separate incisions of about 4 inches in length being made over the external and internal condyles of the humerus, the soft parts were held aside, and the bone sawn through about an inch above its articular surface, which had become ankylosed with the ulna and radius. It was separated from them by means of gouge and chisel, and removed. The wound was then dressed with lint steeped in carbolic oil, supported by a gauze bandage to repress oozing, and slight extension applied. The temperature rose to 102°·2 next morning, and the pulse to 132°, the patient being very feverish and complaining of great thirst. This was accompanied with a plentiful discharge with a foetid smell. Quinine and iron were administered, but with apparently little or no effect; the bandages and dressings were removed, and

charcoal was applied to the wound. The temperature steadily rose until the third evening after operation, when it was found to be 103° and pulse 112. He then complained of great pain in the arm, and had a constant hiccough accompanied with vomiting. These were slightly allayed by bromide of potassium. On the fourth day gangræna set in, and at night it was found necessary to amputate the arm high up on the humerus, which was accordingly done; but the patient, being in a very weak state, gradually sank, and died early next morning.

CASE 4. *Excision of Lower End of Humerus at Elbow-Joint—Secondary, for Injury.*—Malcolm M., æt. 20, from the Hebrides. This young man was admitted in consequence of almost complete ankylosis of the elbow-joint, resulting from a compound fracture through the condyles of humerus about eighteen months previous to admission. He was of weak muscular and low mental power, the genital organs scarcely indicating puberty. Resection of the lower end of the humerus was performed through the upper part of the condyloid portion of the bone, and the condyles and articular end of the humerus excised, leaving the ulna, radius, and attachments of the triceps and brachiiæus muscles entire. So far as the excision was concerned, the progress of cure was most satisfactory, but some days after the operation he was seized with laryngeal spasm without any very obvious cause. The first attack passed off, but during the night a second attack of more urgent character occurred, and Mr Chavasse performed tracheotomy to avert threatened asphyxia. On examining his throat next day there was no appearance of œdema glottidis or laryngeal disease. The tube was removed on the third day, and he suffered no further inconvenience, nor did the attack or operation at all interfere with the operation on the elbow.

CASE 5. *Disease of Elbow-Joint—Result of Injury.*—Jacob H., mason, æt. 46. Admitted 11th September 1876. Patient states that a little more than twelve months previous to his admission into hospital he fell while engaged in erecting an engine, and bruised his elbow. This did not greatly inconvenience him at the time; but again meeting with another accident, and falling on the same elbow, swelling immediately set in, and this was attended with great pain on movement. An abscess formed and burst. The swelling still continued, and he was recommended to come here. On admission the elbow-joint was found to be much swollen, and there was an unhealthy wound of an inch in length over the external condyle of the humerus, accompanied by a number of sinuses varying from two to three inches in length. Patient could not bend his elbow. The wound was dressed with carbolic lotion, and the arm placed in a pasteboard splint to ensure rest, and the arm bandaged from the hand upwards. The joint did not make satisfactory improvement under this treatment, and excision was recommended. The patient, being anxious to procure as useful a limb as possible, consented, and the operation was accordingly per-

formed on the 2d October, and the wound was dressed with boracic acid lotion. The day after the operation the pulse was 92 and the temperature 102°. The case went on well, and in a week afterwards both pulse and temperature were normal. Patient was sent to the Convalescent House cured, 9th November.

CASE 6. *Anchylosis of Elbow*.—Mary Ann C., æt. 12. Admitted 27th October 1876. Patient had suffered a great deal from strumous abscesses on various parts of her body, which burst and left sinuses. About a year ago she fell on the outside of her left elbow, causing it to swell, after which an abscess formed and burst. On admission patient had an anxious, anæmic look, and also several raw surfaces about the chin and head, communicating with sinuses which evacuated a very fœtid discharge. The arm was perfectly ankylosed, flexion, pronation, and supination being alike entirely lost. She had not any pain on pressure or attempted movement. There were two open sores, one behind the external condyle, and the other a little farther down. These sores were dressed with charcoal and solution of chlorinated soda, whilst citrate of iron and quinine, along with compound syrup of the phosphates, was administered internally. The joint was excised eleven days after admission, and dressed with boracic acid lotion. An abscess afterwards formed, but this was opened, and extension with a light weight applied. The patient went on favourably, and was sent to the Convalescent House 11th January, cured.

CASE 7.—Alexander G., æt. 5 years. Gelatinous disease of elbow-joint. Excision of joint performed 30th May. Patient discharged cured, 28th July.

CASE 8.—David H., æt. 5. Gelatinous disease. Elbow-joint excised 5th September. Discharged cured, 2d November.

CASE 9.—George S., æt. 6. Excision of elbow-joint for gelatinous disease, 20th September. Dismissed cured, 5th November.

CASE 10.—J. C.—Excision of elbow-joint for articular caries, with abscesses and sinuses. Dismissed cured.

CASE 11. *Wrist-Joint*.—Donald S., æt. 11 years. Partial excision of wrist. Resection of lower articular end and portion of radius for cario-necrosis of the articular surface. Operation 25th July. Discharged cured, 20th September.

Excisions of Joints—Lower Extremity.

CASE 12. *Hip-Joint*.—Elizabeth S., æt. 6. Caries sicca. This patient was admitted on account of pain and swelling over the hip. The head of the femur could be distinctly felt dislocated and apparently little altered in form. There was no fluctuation to be felt, but there was great pain at night. There was some very doubtful history of a fall, but it was pretty clear that the disease had followed an attack of typhoid fever. Excision was performed. The surface of head of femur lying on the ilium was carious, slightly altered in shape, and a very little pus was found in the joint, the cap-

CASE 2. *Removal of Parotid Tumours*.—Mary C., æt. 22. Operation 20th June. Discharged 26th June, cured.

CASE 3. *Submaxillary Tumour undergoing Colloid Degeneration in Centre*.—Maggie K., æt. 23. Operation 12th September. Discharged 30th September, cured.

CASE 4. *Excision of Bronchocoele*.—Maggie N., æt. 13. Operation 28th September. Death 29th September. Tumour weighed 1 lb. 2 ounces. Mitral stenosis present. Death from shock in 17½ hours.

CASE 5. *Scirrhus Mammæ*.—Jane H., æt. 37. Operation 6th June. Discharged 24th July, cured.

CASE 6.—Janet O., æt. 30. Operation 13th June. Discharged 24th July, cured.

CASE 7.—Ellen R., æt. 69. Operation 15th August. Discharged 6th September, cured.

CASE 8.—Margaret D., æt. 41. Operation 27th August. Discharged 1st October, cured.

CASE 9. *Cystic Tumour*.—George C., æt. 7. Operation 27th June. Discharged 9th August, cured. The cyst was multilocular, situated on the thorax. Had been tapped several times with the aspirator.

CASE 10. *Ovariectomy*.—Magdalen C., æt. 33. Operation 30th July. Discharged 13th September, cured. Abdominal wound was healed by 20th August. Patient had previously been tapped by Dr Matthews Duncan. Slight adhesions of cyst to omentum. Multilocular; one large cyst and a small one equal in size to a walnut.

CASE 11. *Sublingual Epithelioma*.—John W., æt. 36. Operation 2d May. Discharged 25th May, cured. Removal by means of the thermo-cautery.

CASE 12. *Labial Epithelioma and Plastic Operation for New Lower Lip*.—Magdalen G., æt. 67. Operation 13th June. Died 30th June. Erysipelas three days after operation. Died from exhaustion, patient being of a weakly constitution.

CASE 13. *Epithelioma of Lip*.—David B., æt. 63. Operation 24th August. Discharged 30th August, cured.

CASE 14. *Papilloma of Tongue*.—James D., æt. 35. Admitted 27th January 1877, complaining of a growth on tongue, which had existed for twenty years without much change excepting enlargement, which always takes place when he had a cold. General health good, and family history very good. He does not smoke, is very temperate, and never had venereal disease of any form. On admission there was found to be a tuberculated and fissured mass projecting on the posterior third of the right side, on its upper surface, from the raphé to the edge, and to a similar extent antero-posteriorly, passing so far back as the anterior pillar of the fauces. It is apparently quite superficial, implicating merely the papillæ. He was first treated with constitutional remedies, such

as, "Liq. arsenicalis (Fowl.)," "Potas. iodid.," and "Potas. iodid. and hydarg. perch." combined, using sol. sodæ biborat. for a wash for the mouth, and having the tumour covered with hydrargyri subchlor.; but on the failure of these Mr Spence removed the tumour with the thermo-cautery, and ice was applied. Temperature and pulse remained about normal. Six days after operation slight hæmorrhage set in, but this was arrested by the application of tr. ferri perchlor. Patient went on improving, and was dismissed, cured, 8th March 1877, or nineteen days after operation.

CASE 15. *Tumour over Sacrum.*—Christina Jane C., æt. 10 months. Admitted 30th March 1877. The tumour was first noticed at the birth of patient. It was then the size of a hen's egg, and pedunculated, hanging freely. It grew very rapidly, and on admission it presented the appearance of a pyriform mass about 6 inches in the long diameter, 3 in breadth, and about 4 from its attachment to convex border. There were three red spots on its surface (mother's marks). It had a soft feeling amounting to fluctuation, and conveyed the idea of containing fluid along with some hard nodules. The child's general health was good. The tumour was removed five days after admission, and was found to be composed of fat and glairy fluid, with hard fibrous particles amongst it. The edges were brought together by suture, and the whole dressed with lint steeped in boracic lotion. On the removal of the stitches, strips of plaster were applied to keep the edges in apposition, and charcoal dressing to keep the wound sweet. The patient made a good recovery, and was dismissed cured.

Operations on Bone.

CASE 1. *Osteotomy for Refracture of Femur.*—James L., æt. 62. Admitted 12th November 1876 with a badly set and not firmly united fracture of femur, which had occurred two years previously (right femur). Extension with a weight of 5 lb. applied. December 15, a small incision made, a chisel introduced, and the bone refractured. Extension again applied. His average temperature, both before and after the operation, was 99°; only on one or two occasions did it reach 100°. Discharged 19th June.

CASE 2. *Excision of Portion of Tibia.*—John M., æt. 9. Admitted 20th September 1876. Necrosis of tibia. Some time ago patient fell from a wall and struck the front of his leg against a plank, which caused a severe bruise at the time, and since which the pain has increased to such an extent that now patient is unable to walk. On admission erysipelas was found to be present, extending from the ankle to knee, and the leg was extremely sensitive to touch. There was also an opening from which pus was being discharged, whilst the temperature was high and the tongue furred. The patient was first sent to the erysipelas ward for treatment of the erysipelas, and on recovery from that was again admitted to Mr Spence's wards. His pulse was then 112, temperature 105°·6;

urine sp. g. 1005, neutral. Quinine was then administered, and the temperature came down under this treatment. Mr Spence then made an incision down the greater part of the shaft of the tibia, cleared the remaining part of periosteum, resected and removed four inches of the tibia. The wound was then dressed with carbolic oiled lint, and supported by a posterior splint. The patient went on favourably. The dressings were alternated with boracic lotion lint, carbolized lint, and solution of sulphate of zinc. Patient had a slight attack of erythema, but recovered from this in the course of four days, and was dismissed with a useful limb.

CASE 3. *Excision of Part of Tibia.*—Agnes L., æt. 4. Child of a soldier. Admitted 18th November 1876. First noticed about eighteen months previous to admission. Mr Spence removed the diseased portion of bone, and the wound was dressed with lint steeped in boracic acid lotion. Patient made a speedy and satisfactory recovery, and was dismissed cured 9th December 1877.

Sequestrotomy.

CASE 1. *Necrosis of Radius.*—Grace F., æt. 3. Operation 17th May. Cured 15th June.

CASE 2. *Necrosis of Tibia and Ulna.*—Thomas F., æt. 15. Operation 15th June. Discharged 30th August, cured.

CASE 3. *Caries of End of Femur in an Old Excision of the Knee.*—James I., æt. 13. Operation 3d August. Discharged 20th September (sent to Convalescent).

CASE 4. *Removal of Two-thirds of Inferior Maxilla for Necrosis.*—Agnes S., æt. 13½. Operation 1st September. Cured 15th September.

CASE 5. *Necrosis of Tibia and Ulna.*—James G., æt. 7. Operation 25th September. Cured.

CASE 6. *Cario-Necrosis of Pubes.*—Margaret F., æt. 36. Operations 17th May and 9th August. Discharged 6th September, cured. Pulmonary phthisis developed during residence in hospital. One of the knee-joints had been excised 15 years previously.

Lithotomy.

CASE 1.—Henry S., ætat. 18. Discharged cured, 26th April 1877.

CASE 2.—William M'H., æt. 9. Operation 2d May. Discharged 18th June, cured.

CASE 3.—William K., æt. 30. Operation 4th July. Discharged 22d August, cured.

CASE 4.—John B., æt. 70. Operation 1st August. Discharged 27th September, cured. Urine passed by the urethra for the first time on 25th August.

CASE 5.—John L., æt. 61. Operation 12th September. Discharged cured 21st October. Secondary hæmorrhage 20th Sep-

tember; stopped by liq. ferri perchlor. fort. More blood passed by urethra on the 28th September; on the following day the urine was a dark port wine colour from the same cause. This did not affect his health nor appear to delay recovery.

Radical Cure of Hydrocele.

CASE 1.—George D., æt. 63. Operation 11th May. Discharged 1st June.

CASE 2.—Patrick R., æt. 48. Operation 1st June. Discharged 27th June.

CASE 3.—Andrew C., æt. 65. Operation 17th September. Discharged 22d September.

Perineal Section.

Thomas O., æt. 33. Operation 13th September. Perineal abscess and enormous prostate gland. Cured.

Stricture of Urethra.

CASE 1. — John T., æt. 36. Admitted 2d June. Discharged 2d July, cured.

CASE 2.—Andrew C., æt. 21. Admitted 12th July. Discharged 14th August, cured.

CASE 3.—James C., æt. 54. Admitted 1st August. Discharged 1st September, cured.

CASE 4.¹—Irvine W., æt. 71. Admitted 17th August. Discharged 4th September. Died. Patient very decrepid. Operated on by Mr Syme (perineal section) 18 years before. Stricture very tight, but finally dilated up to No. 7. Suppurative orchitis appeared, and patient died from exhaustion.

CASE 5.—James C., æt. 36. Admitted 1st September. Discharged 1st October, cured.

CASE 6.—John A., æt. 38. Admitted 4th September. Discharged 3d October, cured.

Elevation and Removal of Piece of Frontal Bone. — George D., æt. 7. Admitted 12th August. (Under treatment.) Operation same date. Depressed comminuted fracture of frontal bone, due to a fall down stairs.

Herniotomy.

CASE 1.—Anne D., apparently about 30 years of age. Admitted on the 22d January 1877, with strangulated femoral hernia. On admission, intense pain over the belly, lower limbs drawn up towards the abdomen, pain increased by touching the belly, or by any attempt to draw down the limbs. The patient stated that she was eight months pregnant, "that the lump" came down between two and three days before her admission into hospital, and she had vomiting, but did not send for a doctor until the night before ad-

¹ See General Remarks.

mission, when he advised her being sent to the infirmary. The hernia was about the size of small hen egg, tense and painful. She was put under chloroform, and the operation performed at once. There was considerable escape of dark serum from the peritoneal cavity when the constriction at the neck of the sac was divided. The intestine was congested and coated here and there; but as there was no appearance of gangrene, it was returned and the wound closed and dressed. An opiate was administered. The bowels acted spontaneously shortly after the operation, with some relief to the pain and tension. Abortion, however, took place during the night, after which she sank rapidly, and died early on the morning of the 23d January.

CASE 2.—*Strangulated Umbilical Hernia*.—Charlotte S., æt. 44. Operation 31st August. Discharged 29th September, cured.

For Salivary Fistula.—David A., æt. 11. Operation 20th September. Discharged cured, 10th October.

(*To be continued.*)

ARTICLE II.—*On Anæsthesia and Anæsthetics*. By J. G. MACVICAR, LL.D., D.D., Moffat, N.B.

THERE is no single English word which gives so nearly the meaning of anæsthesia as insensibility. Unconsciousness is too comprehensive. Thus a person under chloroform in a state of complete anæsthesia may yet be actuated by great activity of mind, dreaming most pleasingly—nay, ecstatically, and remembering his dream when the anæsthesia has passed off. The thread of consciousness must therefore have survived all the time, only, the mind was secluded from all knowledge and feeling of the investing organism and surrounding objects. Hence the value of anæsthesia. By inducing it, a person may be saved from bodily pain, whether occasioned by natural causes or by the hands of the surgeon.

We are too ignorant of the intimate structure of all the tissues to admit of our knowing the state of the organism which causes anæsthesia; but as there is no doubt that an imperative necessity of life is the existence of currents in the organism—the respiratory being peripheral, connecting the individual vitally with the world of matter, and the cerebral central, connecting him with the world of mind, and that of the blood the mediator between them,—so perfect health, *mens sana in sano corpore*, may be conceived as that condition of life in which the life-currents in the organism are normal in form and force, in course and velocity, especially those of the cerebral system, on which mental phenomena immediately depend.

May it not also be safely inferred that when the mental health

is high—when the mind is richly and rapidly suggestive, a state of gaiety accompanying—the currents on which the mental state depends are quicker than during mental hebetude and depression, as also that they may become so slow, in that region at least, which in our ignorance of what and where it is, we may call by the old name of sensorium, neither thought nor feeling in reference to the surrounding organism can emerge? This retardation of the life-currents would, of course, imply a corresponding retardation in the transformation-processes of the tissues in which the currents were embodied. But on tissues we need not touch, for anatomy is still at the distance of the fixed stars from knowing the elementary mechanism of any tissue.

These things premised, we are prepared for forming a rational hypothesis as to the action of anæsthetics, and for discovering which may be expected to be the safest and best.

The Function of Aqueous Matter and Ammonia in Tissue.

Though it utterly baffles microscopic anatomy to detect the integrant element of tissue, and chemistry to separate it into its organized constituents, yet this art has been able for a century to give the substances which present themselves when tissue is reduced to minima which are no longer decomposable. Omitting certain other substances which are present only in small quantity, the chemical atoms or elements extracted from tissue are only four, viz., hydrogen, with oxygen and azote and carbon.

But this is merely a chemical conception of the constituents of tissue. These substances do not occur in the organism in this condition. In nature, when oxygen and hydrogen meet, and are not prevented by previous states of union, they generate aqueous matter, a substance very different from either and from both of them, though it is produced by their concurrence, and in vanishing gives them up again as they were before. And, similarly, azote and hydrogen meeting in nature in the quantities in which they occur in tissue generate ammonia, which has no more any of the characteristics of azote than aqueous matter has of oxygen. But these two substances—aqueous and ammoniacal vapour—are at the same time remarkable for their similarity, both physical and functional—keeping out of sight the educts of their destruction or decomposition in the laboratory.

They are no longer permanently aeriform at the surface of the earth, nor are they capable of forming permanently liquid and concrete substances; they are therefore incapable of constructing organisms in this planet. Aqueous matter, according to temperature and superincumbent pressure, is either solid, liquid, or aeriform; and in all those states it is more or less volatile, and especially so when in union with ammonia, which is most highly volatile, forming a vapour of very nearly the same specific gravity as aqueous vapour,

but occupying double the volume.¹ From this, then, we reasonably infer that living tissue, in so far as it consists of aqueous matter and ammonia, is anything but stable. It must be ever tending to change the concrete for the aeriform state. The organism must therefore, in so far as these constituents actuate it, tend to be very lively. But its life must tend to be very ephemeral. How then can life be protracted to such a length as we know that it often is?

The Function of Carbon in Tissue.

To this an immediate answer presents itself. More than half of the living tissue consists of carbon. And the carbon in the tissue, if existing free, or uncombined with oxygen or hydrogen, being one of the most fixed, and consequently fixing, of all substances, its atoms may occupy places where they may serve as clamps for detaining in the concrete state, and moderating the tendency of the vapours to change their form or places and so be off. Now, that carbon exists in tissue not in combination with oxygen or hydrogen otherwise than as water and ammonia, fully appears from chemical analysis. Thus, let us look at the proteine of organic chemistry. No doubt it is a construction of the laboratory which does not exist in tissue. But it is a normal molecule (or rather half molecule, being as usual estimated by a substance supposed to be one atom only, whereas it consists of two), viz., $C_{48}H_{36}Az_6O_8$ (Dumas and Cahours); and to find the unit of which it consists, let us take the formula containing one atom of Az only, as has been done by C. Schmidt, as the result of his analysis of the muscles of insects, the most powerfully muscular of all creatures. We thus obtain



Now, giving the hydrogen to the oxygen and the azote, we obtain three atoms of aqueous matter and one of ammonia, and there remain eight atoms of carbon free to be united with these vapours, and to act as clamps in an element of tissue. Neglecting what I have myself shown as to this matter (the time for attending to which has not yet come²), this surely reminds us of what the admirable

¹ If the reader is to enjoy in any measure, or give a fair hearing to what follows, he must consent to the use of the original atomic weight of a single atom of oxygen (an aeriform unit of oxygen gas consisting of two atoms coupled and in some degree neutralizing each other). He must also not expect to find that hypothesis adopted which assumes that because the elasticity of aeriforms is equally affected by equal increments and decrements of temperature and of pressure, therefore there is the same number of aeriform units in equal volumes in all aeriforms. There are good grounds for expecting equality in most cases, and a ratio of 1 : 2 : 4 : 8, etc., in other cases. But an equality in all gases, the most dissimilar in other respects, is quite unlike the variety and harmony of nature. I assume that an atom of common vapour occupies the same volume as an atom of hydrogen, of azote, of oxygen gas, of carbonic acid, etc. And this I call the normal or atmospherical volume.

² *A Sketch of a Philosophy*, part iii. p. 99.

Laurent conjectured as to the form of the atom of ammonia, when he concluded that it was a hexagonal prism. Then in C. Schmidt's formula the atom of ammonia would form the axis of the structure, the three atoms of aq. would be attached to the alternate sides of the prism, and of the eight atoms of carbon, six would be peripherally attached to the three aq., and the remaining two disposed of, one on each pole; so that, by means of the fixing character of carbon, that element of tissue might be made continuous with the adjacent ones, the whole rendered somewhat stable, and a laminar or textile fabric constituted, instead of a congeries of individualized molecules having no organic connexion.

The function of the aqueous matter and ammonia (assisted by the arrival of oxygen in the lungs and the abstraction of the carbon let loose after holding on for a time), in virtue of their easy transformability and decomposability, would be to insist on that continuous but regulated changefulness in the tissue on which its life consists. Meantime much hydrogen is momentarily developed. Now, its function is the opposite of that of carbon.

Carbon, the Anæsthetic Principle.

According to this view, then, carbon, when presented to the living tissue, so that the tissue can feel its presence, is the great anæsthetic, and hydrogen in the same circumstances is the corresponding stimulant, along with the aqueous and ammoniacal vapours.

And here it is necessary to say, though I cannot attempt to prove it here, that certain chemical elements deemed simple have as their polar parts either actual embedded carbons or similar forms functioning similarly. Of this kind among aeriforms are azote and chlorine, the former element given for imparting a certain stillness or amount of anæsthesia to the atmosphere, the latter when fixed by sodium, and constituting common salt, serving as a great anæsthetic or antiseptic in nature. There are also others, such as arsenic. Carbon is not, therefore, the exclusive anæsthetic. Nor is hydrogen the only stimulant. Nor can we treat of either without keeping oxygen in mind, which is at once the grand vitalizer and the grand destroyer of life.

For such anæsthetics, then, as shall not act all in one direction, and wholly make for death, but shall tend to maintain life during their anæsthetic functioning, plainly we ought to look first to the hydro-carbons,—hydrogen to keep us “quick,” while carbon makes for death, that is, complete and permanent anæsthesia.

Hydro-carbons.

Among the multitude of hydro-carbons which chemists have formulated, there is still one missing which is of intense interest to the physiologist. This is the hydro-carbon in which the three atoms of hydrogen in marsh gas, which are substituted by chlorine in chloroform, are substituted by carbon. It is so

loaded by carbon, that as it exists in nature only as a molecular constituent, and is itself incapable of being raised into the aeriform state, it is passed in the laboratory when thrown out of its molecular state merely as a carbonaceous residuum containing a little hydrogen. But though one more may thus seem to be added to the host of hydro-carbons already needlessly numerous, yet there are only four bodies of this class which we need to consider in their relation to anæsthesia. Calling $H = 1$ and $C = 6$, and arranging these letters as far as possible so as to show the structure of the elemental molecule, that is, placing the substance on the two poles first and last, or on the left and right of the formula, and the interior matter (the axis and its equatorial appendages) between them, we obtain the following formulæ, beneath which I have written them according to prevailing conceptions, in which when $H = 1$, its companion $C = 12$, and as to the order of the symbols in the formula, nothing higher is aimed at than the order in the letters of the alphabet!

Benzigen.	Marsh-gas.	Chloroform.	Perfume.	Narcogen.
	H^3	Cl^3	$(HC)^3$	C^3
CHC	CHC	CHC	CHC	CHC
$\frac{1}{2}(C^2H^2)$	CH^4	$CHCl^3$	$\frac{1}{4}(C^{10}H^{16})$	$\frac{1}{2}(C^5H^2)$

The first is the gas nascent at the carbon poles on the voltaic arc in an atmosphere of hydrogen. When doubled it is dimorphous, and is the acetylene of the chemist. But its place in nature is in benzoin, which by letting bits of it fall upon a hot tile from which it sublimes, while a person holds his face over it, this product of nature has been used in the East, time immemorial, and still is used as an anæsthetic.

The second is marsh-gas, which, though it carries so much hydrogen in proportion to its carbon, has, let us hope, some blunting or anæsthetic as well as some life-sustaining power when sufficient oxygen for respiration is supplied along with it; for in coal mines, where it is so abundant that at the touch of flame the atmosphere explodes in flame, the miners continue their work enjoying their pipe of tobacco, the lighting of it causing a fatal explosion, whereas, if like the sailor, they would be content to chew their tobacco, their lives would be safe, and would not depend on keeping their Davy locked, which it appears they would sooner die than do.

The third is chloroform, the anæsthetic with which every one is familiar.

The fourth is the element of the nonoxygenated volatile oils, the principal perfumes of the vegetable kingdom. The chemical formula is that of the tetratomic molecule.

The fifth is the element mainly constituent of the vegetable alkaloids, so remarkable for their pain-assuaging, sleep-inducing, killing, in a word, anæsthetic power.

But letter formulæ, whether old or new, give either no conception at all, or a very mean one of the molecular structures which they stand for.

I therefore proceed to give diagrams of the two first, of the kind which I use in my works on Molecular Morphology. They are sufficient to show, by looking at the axial part in both which represents an atom of hydrogen, that this element, along with two points for the attachment of other atoms, one on each pole, has three such points on the equator unoccupied in the first diagram, occupied by three atoms of hydrogen in the second.

Benzigen.

CHC C²H.

Petrolegen (Marsh-gas).

H³
CHC = C²H⁴.

With regard to the atomic structure of the poles, also, which represent carbon, they serve to show that its equator is pentagonal, while that of hydrogen is trigonal, and therefore that such bodies as the first, when condensing into molecules symmetrically round a common centre, must do so in groups of twelve, constituting dodecatoms; while those with triangular equators must group similarly in sets of twenty forming icosatoms. And under one or other of these Platonic polyhedra the integrant molecules of substances are generally comprehended, the chemical formula generally representing half the molecule, because it is constructed by the chemist in relation to what is supposed to be a single atom of the controlling substance, when in reality there are two atoms, one on each pole. Thus benzine is given in the fashionable notation as C_6H_6 , that is, as $C_{12}H_6$ in the former notation, this being the half molecule, whose complete formula is



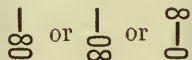
Such diagrams are a great help to the conception of molecules. But even with the aid of perspective it is difficult to represent on a plane, such as paper, objects extending in three dimensions, and diagrams in perspective are difficult to draw and expensive. Something, however, may be done by way of diagram even by types, which are already in the hands of the printer, as was successfully accomplished in this Journal in communications by me some years ago. Let us then here make the attempt, adopting the former symbols.

- | A dash or fig. 1 (the conventional atomic weight of hydrogen) for an atom of hydrogen.
 ∞ A fig. 8 lying horizontally (the atomic weight of a single atom), for oxygen.
 O A cypher, also horizontal, for carbon.
 A larger cypher for chlorine.

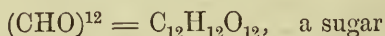
These types are also a sort of profiles of these elements.

Alcohol.

The simplest combination of the organic elements C, H, and O, which can be called organic, is when the three are united on the same axis, constituting what has been called an element of hydrate of carbon. It is plainly trimorphous, and may be either



Being unsymmetrical it is not isolable, and consequently is unknown to the chemist as a separate substance. But the first and the last figured here will unite into dodecatomic, and the middle one into icosatomic molecules. Accordingly, one of the first products of nature in vernal organization is

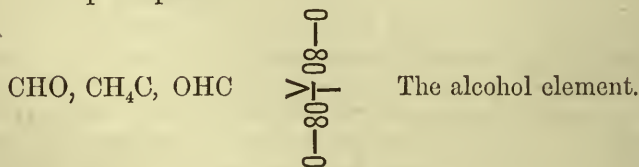


isometrical or undifferentiated on the poles, and therefore comparatively neutral and insipid. Instead of regarding it as the molecular state of hydrate of carbon, which is a mistaken conception, we will call it the molecular state of saccharines; for it is but reasonable to attach the conception of saccharine to the constituent of sugar.

Now, by the beautiful action of fermentation, sugar, along with the construction of other substances in small quantity, may be transformed into a substance of which the formula of its element is



Constructing this with all the insight which can be obtained, we obtain for the central part an atom of marsh-gas carrying a saccharine for each polar part.



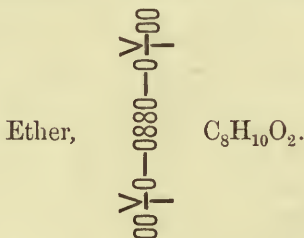
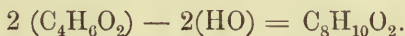
Now, does not this structure, according to what has preceded, explain the characteristics of alcohol? Thus its poles being quick or versatile to such a degree, and terminated now by

hydrogen, now by oxygen, now by carbon, alcohol ought to be both stimulating and soothing; and as the polar elements are saccharines, the dodecatom must be coated with sugar, so it may be inferred to be agreeable to the taste. The arrangement of the constituents in the diagram is, I apprehend, the ultimate, the most fully developed or differentiated state. And in this state, as the carbon is terminal, the physiological action of alcohol will be wholly æsthetic or stupefying.

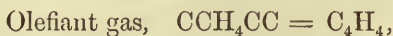
Alcohol cannot be tolerated by the living tissue unless diluted with water, and the proportions of this benignant liquid, which seem to favour the stimulating effect most and the stupefying effect the least, are three parts of water to one of proof spirit. And this appears to be the proportions resulting from the fermentation of the juice of the grape when grown in the sunniest climes.

Ether.

By inducing a synthetic phase of action in the elements of alcohol, they may be made to couple, letting go an atom of HO from each, so as to shorten the axis and to establish symmetry and restore individuality, and thus to render the new substance capable of the aeriform state, like alcohol itself. Its formula is therefore—



It has the aspect of being a very effective anæsthetic. But in the aeriform state it must surely be defective in diffusiveness, and very heavy to breathe. As the saccharines are occluded in the centre also, it is not to be expected to be so agreeable to the taste as alcohol. It is, however, finely constructed and differentiated, and in the molecular or liquid state, when the single elements are grouped round a common centre, and the molecule is spherical, the length of the axis of the single element will not tell against its stability. We can thus understand that it may be very valuable as a solvent, etc., in the laboratory. It is, however, plainly on the way to be reduced to



by dedoublement again, and letting go 2(HO).

Organic Ether.

It appears that when alcohol or ether is taken into the stomach, a small quantity is digested, that is, analyzed and reconstructed in forms suggested by the organism. Now when the peripheral atoms of HO have gone off, doubtless as aq., thus for the moment quenching thirst and giving a sensation of coolness, there remains of the alcohol element C_4H_5O . This group, as has been already stated, is essentially dissymmetrical, and therefore unisolable. But it would be far otherwise if the terminal atom of hydroxide, HO, were to lapse into aq., and assume the central position held by an unit of oxygen gas in ether. We should then have an element of this structure, in which the star stands for the atom of aq.



In consequence of the law of assimilation, whence it results that bodies both in the aeriform and liquid, and even solid state, whose formulæ are doubles or halves of each other, occupy volumes which are also doubles or halves, it is probable that this body, if it could be obtained, would in the state of vapour be only half the weight of ether vapour, and that it would be very volatile, and suitable for being breathed. And, according to the theory here advanced, it ought to be the safest and best anæsthetic conceivable, provided it have not an offensive taste, which can only be ascertained by experiment. Meantime it has not as yet been obtained by the chemist. But perhaps it may be obtained when to his present apparatus of analysis he adds the vacuum-tube, to which small quantities of the vapour under experiment are admitted, traversed for long periods by the diffused or silent electric discharge, and when for recognising substances he has recourse to their spectra and refractive power. If it were developed by the living tissue during the digestion of alcohol, it would explain the value of that substance as a medicine, and its power of charming and seducing human creatures to its excessive and habitual use, which leads so many, so many ways, to ruin.

Chloral Hydrate.

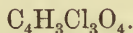
It has been already mentioned that, according to the molecular morphology which I advocate, the polar parts of an atom of chlorine are atoms of carbon welded into the central parts. Since then the polar parts are those which chiefly display chemical action, chlorine may be expected to function more or less like

carbon, and therefore ready to substitute hydrogen in hydrocarbons etc.

Hence a new molecular species, still of the general type of alcohol, but with the three hydrogen wings in the central atom of marsh-gas substituted by three atoms of chlorine.

Chloral-hydrate,

Chloral-hydroxide,



At ordinary temperatures it is crystalline, and cannot be respired, but in solution it may be taken into the stomach, and is found, as might be expected, to be a powerful and very valuable hypnotic and anæsthetic.

It is believed that when in the interior it breaks up, liberating the central part, namely, the atom of marsh-gas, with its three hydrogen wings still substituted by the three atoms of chlorine, that is

Chloroform.

Of this anæsthetic the value and the danger are well known.

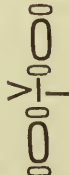
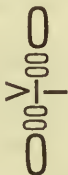


It is very extensively used, yet not so as to prevent physiological chemists from seeking another which shall be safer, and this, it is hoped, has been found in

Ethidene Dichloride, or "Clorure d'Ethelidène,"

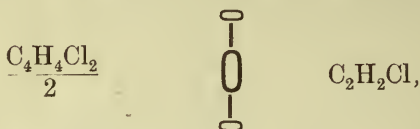


This formula is dimorphous with symmetry. But in both cases the chlorines are either directly on the poles of the atom of olefiant gas, or they are between the two atoms of carbon, as are here represented:—



The former (Dutch liquid) would certainly be a destructive substance if breathed, and though the latter would be an anæsthetic, it would not be safe if it underwent decomposition in the lungs.

But if we assume the chemical formula to represent the double of that of the substance which has been judged to be the best anæsthetic by respiration that has yet been tried, we could easily understand this. For half the chemical formula gives



in which the chlorine is fixed in the centre, as it is in chloroform and in chloral hydrate, and the poles are the simplest hydrocarbons, the carbons terminal, that is, in the position for acting anæsthetically with most effect.

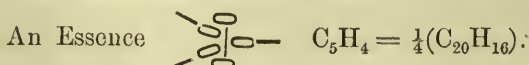
The Perfumes.

All the anæsthetics which I have as yet referred to are productions of art. But nature produces many anæsthetics. The vegetable kingdom, though it may not grow up as trees, causing by their exhalations insensibility even to death in all living creatures beneath and around which breathe them, yet constructs in the most matured or autumnal products of many plants anæsthetics of great power. But it is provided that they shall retain the solid form, and require to be sought for in the vegetal mass, and find access to the living tissue through the stomach or skin, not through the lungs.

So long as they are volatile and leave the plant that produces them for the air, retaining enough of hydrogen as they do thus to effect their escape and diffusion, for this reason also they prove to be stimulating as well as soothing. Such are the manifold perfumes of the vegetable kingdom.

Now, in reference to them, as well as the solid hypnotics and anodynes in the alkaloids, it is most interesting to observe that, like those we have been considering, they all have an atom of marsh-gas for their type. The perfumes have this beautiful structure, with three atoms of carbon brought into union with the three equatorial wings of hydrogen. The fixed anæsthetic element in the alkaloids, etc., has these three hydrogens substituted by three atoms of carbon, as they are in chloroform and chloral by three atoms of chlorine.

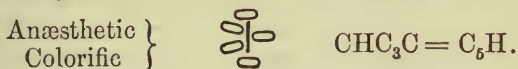
The chemist operating always where he himself and his substances are under great pressure, has seldom as yet obtained these essences in single elements, but only in such groupings as may constitute the simplest and most symmetrical molecules possible, viz., tetratomic, dodecatomic or icosatomic.



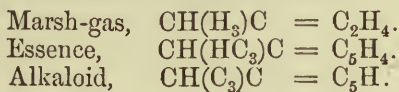
Thus the single perfume element which, in its greatest simplicity is, according to what I have stated, $\text{CH}(\text{H}_3\text{C}_3)\text{C}=\text{C}_5\text{H}_4$, is by the chemist presented to us in tetratons $\text{C}_{20}\text{H}_{16}$. Now, this is the formula of many of the non-oxygenated essences, which that they may be many, while the constituents are the same, we can easily understand, by observing in how many different ways the equatorial atoms of CH may be applied to the axial atom of hydrogen.

The Alkaloids.

A study in higher molecular synthesis now awaits us, leading to the construction of the medicines usually resorted to for soothing pain and procuring sleep, and therefore possessing anæsthetic power. But I have already advanced more than the chemical adept will easily tolerate, and which will probably have to wait long before it is made a subject of favourable study. I will therefore only say, that in the alkaloids generally the axis of the single atom is usually ammonia, and around it, as also on its poles, are placed a hydro-carbon element in which the axial atom of H is saturated with carbons, as in marsh-gas it is saturated with hydrogen and carbon, that is, in which the three hydrogen wings of marsh-gas are substituted by three atoms of carbon as well as the poles by two.



Instead, therefore, of the numberless possible and actual hydrocarbons which chemical system presents to us, nature invites us specially to the consideration of these three:—



ARTICLE III.—*On the Occurrence of the Common Fluke (Fasciola hepatica) in the Human Subject.* By Dr ANDREW WILSON.

THE common liver fluke (*Fasciola hepatica*) is not usually regarded as a marked invader of the human domain, and cases of its occurrence as a human parasite are by no means plentifully met with either in purely medical records on the one hand, or in helminthological treatises on the other. As a pest of the sheep-breeder the fluke is but too well known. Its suppression affords ample employment to veterinary surgeons, and the mere history of its growth and production presents a study of great interest to zoologists at large. It may be well to preface the short account of a case of the occurrence of this parasite in the human subject, by a brief reference to its cycle of development. Such a study

will, perhaps, be found to assist our comprehension of the source of parasitic infestation, and may also serve to interest practitioners in a form of animal life which I am persuaded is of more frequent occurrence in the human economy than is generally suspected.

The characters of the common fluke, as usually found within the bile-ducts and gall-bladder of the sheep, are readily enough distinguished. It is an organism possessing a flattened body—hence is one of the *Platyelmia*, or flat-bodied Scolecida—of elongated oval shape, and possessing a well-marked anterior projection, forming the so-called “head and neck.” The average length is $\frac{3}{4}$ of an inch. The margin of the body is well defined, and appears of darker hue than the internal parts. Two well-marked orifices exist in the body of the fluke. One is the “oral” sucker perforated by the mouth-aperture; the other is often named the *acetabulum*, and exists below the neck on the ventral surface. The presence of these two openings has given rise to the name *Trematoda*, applied to the order of which the flukes are the typical representatives. The generative organs open just below the acetabulum, and consist of male and female reproductive glands—the flukes, like the tapeworms, being thus hermaphrodite. The central and light-coloured area of the fluke’s body may be held as roughly corresponding with the position of the male organs, which consist of an eversible penis, a seminal receptacle, two *vasa deferentia* and a tubular testis. The female organs include a so-called “uterine cavity,” generally found to contain eggs on microscopical examination, whilst an oviduct exists and leads to the ovary. Connected with the ovarium we find two *vitelline ducts* which, together with the yolk-sacs, provide the coverings and nutrient appendages of the ovum proper. The digestive system of the fluke exists as a system of ramifying tubes, the branches of which end in caecal extremities. No circulatory apparatus is developed, but a peculiar system of vessels, constituting the *water-vascular system*, is readily discernible. The functions of this latter system are, in all probability, of excretory nature.

The life-history of a fluke, like that of a tapeworm, is divisible into two well-marked “biotomes” or life-epochs. As the young *Tænia solium* ends its first biotome in the muscles of the pig, so the young fluke terminates the days of its youth, so to speak, in the tissues of a water-snail. Liberated from the sheep’s liver, after the occurrence of the usual preliminary processes common to all ova, the embryo-fluke, favoured by chance in its development, escapes into water. It appears at first, according to Leuckart, as a minute body of blunt, conical shape, and provided with cilia. It would appear that this free-swimming fluke-embryo develops within itself a secondary organism named a *redia* or *sporocyst*; this latter being a simple body, possessing, however, the rudiments or beginnings of a digestive system. Within this sporocyst certain little bodies would appear to be developed, and to these bodies the

name *cercariæ* has been applied. These cercariæ are "tailed" organisms; they appear to be produced by a process of internal gemmation, and possess many of the characteristics of immature flukes. The cercariæ sooner or later escape from their investing sporocyst, and seek to enter the body of some fresh-water mollusc, within the breathing-chamber of which they become encysted and quiescent—this stage of fluke development being comparable to the "resting larva" or *scolex* of *Tænia*. Within the snail, the larvæ acquire a further development, and, on gaining admittance to the body of the sheep, being received with water or with damp grass, they finally pass, probably by boring, from the stomach to the liver as their natural resting-place.

Such is the brief chronicle of the fluke's life-history. The specimen which came into my possession is one of large size. As preserved in spirits, it measures $1\frac{1}{4}$ inch in length, and over $\frac{1}{4}$ of an inch in breadth at its middle part. The fluke in question was presented to me as a "curious worm," which had been conveyed direct to a druggist by the mother of the patient—a girl æt. 16—from whose alimentary canal it had been discharged. On being shown the specimen, and recognising the interest of the case, I made inquiries with a view to determine the exactitude of the statement that the fluke had actually been discharged *per anum*. Ascertaining that the patient had been treated for other ailments by Dr Ronaldson at the Fountainbridge Dispensary, I requested that gentleman's co-operation in the investigation of the case. Dr Ronaldson kindly complying, we ascertained from the patient's mother—a woman of considerable intelligence—that she had found the fluke on the chemise of her daughter on preparing to wash the garment in question. The fluke was adherent to the lower part of that article of clothing, which, after being taken off the patient's person, had been duly rolled up and conveyed to an empty wash-tub, being placed therein along with a number of other articles preparatory to the usual family washing. Interrogated as to the possibility of the chemise having come in contact with other articles of clothing, the patient's mother replied that the garment had been rolled up and conveyed directly to the wash-tub after being discarded, and that the fluke was only discovered on the chemise being unrolled two or three days thereafter. There is thus a strong *a priori* case for the assumption that the fluke was discharged from the patient's person. Interrogated further as to the possibility of her daughter having acquired the fluke from an external source, our informant replied that liver was an article of consumpt which her family did not affect; and that, save on the theory of its having been discharged from the bowel, she could in nowise account for the presence of the organism. The patient, it may be added, is a girl of somewhat delicate health. She is employed in an indiarubber factory in Edinburgh; and the mother remarked that at the period when the

fluke was discovered, the patient suffered from internal pains and general gastric derangement—a state probably due to the catamenial invasion.

I have dwelt upon the particulars of the discovery of the fluke in order that the case may be fairly laid before the readers of the *Journal*. The facts clearly point to the fluke having been discharged from the patient's bowel, and the correctness of the above statement is supported by the absence of want of any motive for deception on the part of the patient or her mother, and by the further consideration that the fluke is not unknown as a tenant of the human economy.

Concerning the occurrence of the *Fasciola hepatica* in man, Cobbold remarks that Palla's and Bidloo record instances of this nature; whilst Professor Partridge of King's College detected the organism in the human gall-bladder. Giesker of Zürich records a case where a fluke had lodged in the sole of a woman's foot; and a Mr Fox, of Topsham in Devonshire, notes a case where a fasciola was found in the scalp, about three inches behind the ear in a child's scalp. Mr Harris of Liverpool also found six or seven flukes in the scalp of a child.

That the fluke may select the human body as an area of distribution is perfectly certain, and that it may inhabit the gall-bladder and bile-ducts of man, as in the sheep, etc., also appears to be a stable fact. It is more difficult to account for the location of the parasite in the skin, and I am not prepared to offer any comment upon these latter cases, especially in the absence of any definite information respecting the exact circumstances under which the discovery was made. Cobbold, in remarking on the question of fluke-infestation in man, says, "On the whole, however, it is quite evident that this parasite is liable to invade man, and there cannot be a shadow of doubt that instances have occurred where its presence has been overlooked, and therefore unrecorded. The rarity of its occurrence, however," adds Dr Cobbold, "is sufficiently explained by the circumstance that man in a civilized condition can seldom have occasion, either accidentally or otherwise, to swallow the intermittent molluscan hosts in which the higher larvæ of this parasite probably dwell. The circumstance that the fluke has several times been found in abscesses beneath the skin, seems to me to indicate that the animal in its highest larval state possesses a special boring apparatus, such, for example, as we find in the case of *Cercaria ornata*."

These remarks are highly interesting, but they appear to me, at the same time, to overlook some important features connected with the source of infestation especially. There is, for instance, so far as I can discover, no reason why the embryo-flukes may not gain access to the human digestive tract as they gain admittance to that of the sheep, namely, in water. There seems no need to postulate that the "molluscan hosts" of the flukes should be swallowed either by the sheep or man, as a preliminary measure

to infestation. The question of the free state of the larva prior to its reception by the vertebrate host is, of course, a debated one, and we do not know sufficient of the life-histories of the Trematoda at large either to affirm or deny the possibility of the larval forms being obtained directly from water. But, in the absence of decisive information on this point, the idea that these resting larvæ or cercariæ may pass into water and be thence swallowed by their final or secondary host, is by no means an unreasonable or unimportant consideration relative to the methods of infestation. Indeed, the fact that these parasites have been found beneath the skin would seem clearly to point to the presence of a free boring stage as the last epoch of their larval existence. It is needless to point out that no danger of direct infestation is incurred by man from the liver of the sheep, seeing that the embryo-flukes require to pass through their complicated cycle of development preparatory to entering the mammalian alimentary canal and liver. To water, and probably also to raw and unwashed vegetable matter, as likely to contain the developing larvæ of these organisms (either within their molluscan hosts or liberated therefrom), we must look for the sources of infection. It is a fact worth noting, perhaps, that, in the present case, the patient's mother described her as a girl fond of eating "all kinds of things," and as "making herself ill" through the decidedly heterogeneous nature of her aliment.

It may not be out of place, by way of conclusion, to point out that practitioners are not unfrequently deceived into mistaking single "joints" of *Tæniæ* for flukes. I have had more than one specimen of "a fluke" submitted to me for examination and determination, these so-called "flukes" proving to be merely detached joints of tapeworms. The zoology of the busy practitioner is apt to get "rusty," along with other branches of a liberal culture; but there hardly exists any just or lawful impediment against the ready determination and distinction of the fluke and its allies. Dr Cobbold waxes extremely wroth—in a footnote to his work on Entozoa—with a certain Dr Chabert of New York, who declared that several patients afflicted with *Tænia* passed "numerous specimens of *Distoma hepaticum*" (the common fluke) likewise. Naturally, Dr Cobbold reflects somewhat warmly and justly on the inference that "the passage of distomes by patients during life (*sic*) is even regarded by Dr Chabert as indicative of the presence of *Tænia* within the intestines." Dr Cobbold further inquires, "Are not these so-called distomes the well-known *proglottides*?"—*i.e.*, the detached and mature joints of *Tænia*. My experience goes to prove that the answer to Dr Cobbold's query should be an affirmative one; and the circumstances just detailed may serve to impress upon practitioners the value of accurate observation of parasites as tending not only towards a perfect diagnosis of their cases, but also as serving to enrich the records of helminthology.

ARTICLE IV.—*On the Etiology and History of Leprosy.* By
W. MUNRO, M.D., Manchester, late of London.

(Continued from page 138.)

LEPROSY.¹

HAVING thus concluded the treatise on the etiology of leprosy (so fulfilling one chief purpose of this work), I now propose to treat very shortly of the following, viz.:—Symptoms, diagnosis, age of attack, duration and sex, prognosis and treatment. Under the latter I will endeavour, under the heading of treatment of infected populations, to point out the practical means of preventing the disease as indicated by my ideas of its etiology, this being the chief object of the work.

Symptoms.—Tuberculated leprosy. This is sometimes preceded by an eruption of dark blotches on the skin of the body, face, and extensor surfaces of the limbs, and sometimes by maculæ similar to that which precedes non-tuberculated leprosy. These are followed by tubercles which appear on the face, on the cheeks, eyebrows, and lobes of the ears. These are formed by infiltrations of the subcutaneous tissue, and are hard, raised lumps. Meanwhile the hands and feet swell, the skin of the whole body becomes bronzed in colour in the white, and anæsthetic, the eyebrows drop off, the cornea becomes inflamed, and the voice raucous; later on ulceration of the tubercles takes place, and dysentery often ends a life of misery.

Acute Leprosy.—I have seen one case of this, the patient being attacked suddenly with sharp fever, and the lumps on the face and swelling of the hands appearing in a fortnight or so. She had been two months ill when I saw her, but had all the appearance of having suffered from the disease for several years.

Non-Tuberculated Leprosy.—Maculæ,² at first red, tending to

¹ As Dr Bristowe has now supplied the want I formerly referred to by describing leprosy in his "Text-Book of Medicine," and a description of the disease is given in the New Sydenham Society's Translation of Hebra, vol. iv. (in which, however, I think, erroneously, morphœa is described as related to leprosy), I beg to refer for fuller details of symptoms to those easily accessible works, though I think I said enough to enable any one to diagnose the disease even if, as might be the case, he could not obtain these references. Carter and Liveing's works, and the Coll. Phys. Rep. (p. xvi., etc.) may also be referred to. I may say that I have given the ordinary division into tuberculated and non-tuberculated, but others may be adopted, as that of Macrae (*Med. Times*, vol. ii. 1875, p. 103), into tubercular, anæsthetic, mixed, and atrophic. The first and last are the common forms in the West, the anæsthetic commonest in the East Indies. Labonté (*Ed. Med. Jour.*, Nov. 1878) gives an excellent description of atrophic leprosy. He, I may say, thinks the disease hereditary, but to my mind the cases he publishes do not in the least support this view.

² The macular leprosy (*lepra leprosa*, Carter) may, I think, be looked on as simply *lepra vulgaris*, having the leprous poison as its exciting cause, while the analgesia of the centre is not, so to speak, properly to be looked on as a symptom of the local skin disease, but rather of the leprous disease itself. The absence of scales in no way affects the opinion, as Cazenove and Schedel describe *lepra vulgaris* without scales. In a country where leprosy is common,

spread, becoming pale, glistening, without scales, and depressed and anæsthetic in the centre, sometimes appearing and disappearing several times, with months intervening, then accompanied by pemphigus on the palmar aspect of the fingers and toes, then contraction of the fingers and toes, and wasting of the palmar muscles, followed by a dry caries of the bones, and gradual disappearance of the whole digit, leaving the nails in some instances on the knuckles, are all seen as symptoms of this kind of leprosy. At the same time the skin of the body becomes dry and harsh, and sometimes analgesic and anæsthetic. Paralysis of the orbicularis is a marked symptom, allowing the lower eyelid to become everted, giving the face a hideous appearance. The skin on the white race becomes of a dirty pale colour. The nose in a few cases falls in.

In both varieties the lymphatics are affected, being swollen, and often painfully.

Diagnosis.—The non-tuberculated variety can hardly be confused with anything else, but I have seen a case of syphilis very like at first sight to tuberculated leprosy, but the tubercles on the face were rather rounder, and though he had been ill many years, there was no analgesia. It has been confused even lately with elephantiasis Arabum, but the latter is a strictly local disease (being simply tropical erysipelas, with a tendency to recur, and leaving a deposit in the subcutaneous tissue after each attack). It only attacks the lower limbs or scrotum, and could never be mistaken for elephantiasis Græcorum by any one really acquainted with the two diseases. I have seen one instance of non-tuberculated leprosy, in which elephantiasis Arabum (Barbadoes leg) coexisted.¹

Leucoderma is distinguished by the paper-like whiteness of the affected skin, and absence of analgesia.

Age, Duration, and Sex.—I have already mentioned the ordinary age of attack. The age at death I found in St Kitts to be, taking the average of the ages of 62 lepers who died between 1859 and 1872, 32·2 years.² This includes both kinds. As the average

lepra will generally indicate the commencement of leprosy, especially in the East, where non-tuberculated is the most common variety. As Carter points out, hence probably has arisen some of the confusion between the two diseases; but this does not in the least support the idea that there is any necessary connexion between them, or that the lepra vulgaris of Europe is a remnant of real leprosy. Other skin diseases may precede or accompany leprosy. The eruption of the maculæ is sometimes accompanied by sharp fever.

¹ Anomalous cases sometimes occur in Europe, which have been looked on even by men of the highest attainments as leprosy, but which, from their want of symmetry, of analgesia, and of constitutional symptoms, cannot, I think, be properly considered as such. They are liker elephantiasis Arabum, or some obscure lymphatic disease, or of trophic nerve disease, with consequent gangrene. (See, besides cases already quoted, Bell, in *Lancet*, vol. ii. 1875, p. 420, and compare them with a case of elephantiasis in France in the *Abeille Médicale*, Oct. 1878, and one of spontaneous hemianæsthesia and gangrene in *Le Courrier Médical*, 10th Aug. 1878.)

² The average age of forty-two who died between 1817 and 1825 was 29·7 years, being, like the ages of the population, generally shorter than at present. The average age of the whole 105 would be thirty years.

of attack was, I found, twenty years (sixteen in tuberculated, and twenty-four in non-tuberculated), the average duration would be fully twelve years. The oldest age at death was seventy years (doubtless joint evil), the youngest six and a half.

It has been stated by Planck that lepers live as long as the rest of the population. Against this I may mention that, comparing the number of deaths and of lepers in the slave registers in 1817-26, and deaths in the registration books in 1859 to 1870, with the number of lepers living in 1854 and 1872, and correcting the results obtained by comparing the total number of deaths among lepers receiving hospital relief from 1867 to 1872 with the number of these lepers, I found that the average rate of mortality among lepers was $7\frac{1}{2}$ per cent. yearly, being two and a half times that of the population generally (3 per cent.), and four times that of the population over five years of age.¹ Thus leprosy undoubtedly, as might be expected, shortens life.

I had no means of distinguishing in these registers the kind of leprosy, but the age of the living lepers gives an idea of the different mortality of the two kinds, viz. :—

Tuberculated, 34 cases.	Non-tuberculated, 37 cases.
Average age, $22\frac{3}{4}$ years,	39 years.
Oldest, 50 years,	65 years.
Youngest, 6 years,	14 years.

Those figures agree, as far as can be expected, with those of Daniellssen and Boeck,² who give the average duration at death of tuberculated cases as $9\frac{1}{2}$ years, and of non-tuberculated as $18\frac{1}{2}$ years, and with Carter's,³ who gives 9 to 12, and 16 to 20 years, as the ordinary time. Wortabet⁴ found only 2 in 47 who had been affected more than fifteen years.

Sex.—In St Kitts, from my inquiries already referred to, I found that in 1817, of 94 lepers, 60 were females, 34 males. From 1817 to 1827 the slave register shows the deaths of 26 females and 16 males. From March 1858 to September 1870, 32 males and 24 females died;⁵ and from March 1868 to March 1872, 12 males and 10 females receiving relief died.⁶ Together these give 44 males and 34 females. In April 1872 the 72 lepers I found in the island were 33 males and 39 females. Thus, in slave times more females than males were affected; at the later date the numbers are more equalized, possibly because, as slaves, lepers were

¹ The expectation of life at five years in St Kitts, as I calculated from the registrar's returns for six years, 1864-70, was 52.2 years, giving a mortality in the population over that age (before which very few are attacked with leprosy) of under 2 per cent. The other figures are from calculations made by me after going over every entry in the books during the periods stated.

² *Op. cit.*, p. 332.

³ *Rep.* 1874, p. 8.

⁴ *Op. cit.*, p. 188.

⁵ Registrar's book : 4 were white, 11 coloured, 40 black. A large proportion of white, 1 in 11, three times the proportion of white to coloured and black in the population.

⁶ Hospital book.

put apart by their owners to the sea-shore or mountains, and only the *women* of their family would be allowed to attend to them, rendering the latter more obnoxious to the disease.

Of Wortabet's cases,¹ 19 were males and 16 females; and of Daniellssen and Boeck's in St George's Hospital, 74 males and 77 females. Thus, the evidence from Spain, Norway, and St Kitts, though the numbers are comparatively small, show that the great overplus of males in the census of India, if it even shows (as I do not think it does) the *real* proportion of the two sexes affected, is not caused by any special liability of the male sex as such to leprosy, but depends on the circumstances of life under which the population lives. As is seen from the figures I have given in regard to St Kitts, the proportion may vary at different times, as the conditions of life change.

*Pathology.*²—This subject I have mentioned incidentally in speaking of etiology. I have only to add here, that the exudation and deposit of albuminoid matter in the subcutaneous tissue in tuberculated, and in the interfibular spaces in non-tuberculated leprosy, consist of small, nucleated, round cells, crowded together (Carter), and of spindle-shaped elements (Virchow). The pressure of these destroys the surrounding tissues. Daniellssen and Boeck describe a change in the albuminous materials of the blood, which precedes, according to them, this deposit. The thickening of the skin and ulceration in the one kind, and the pemphigus and caries and destruction of the extremities in the other, are all caused by the primary changes.³

The mucous membrane of the larynx is generally the seat of deposit in tuberculated cases. The lungs are seldom attacked.⁴ Changes in the other viscera are too inconsistent to be looked on as pathognomonic.

Prognosis.—This is, in all cases, bad. I have, however, seen one case of joint evil in St Kitts, who, as far as the mere arrest of the disease, after it had deprived the patient of all her fingers, was concerned, might be called cured.⁵ She was a leper in 1817, and was nearly 70 years old when I saw her in 1872. She was then in fair health.

I also saw in Edinburgh, in 1874, at the Medico-Chirurgical Society, a case of tubercular leprosy,⁶ which might be looked on as cured, the tubercles having disappeared and left the face dusky (he was a white man), scarred, and wrinkled, but very probably the disease would reappear. Daniellssen and Boeck figure in their atlas one case of spontaneous cure of tuberculated leprosy. Carter

¹ *Op cit.*, p. 187.

² P. 334.

³ For full pathological details, I beg to refer to the works, already quoted, of Carter and Hebra, also Dan. and Boeck, p. 216 *et seq.*

⁴ This is in Norway, but, as Sweeting (*Medical Times*, vol. ii. 1860, p. 208) says, phthisis is a common cause of death in the West Indies.

⁵ Landré (p. 12) gives a similar case, and Macrae (*Medical Times*, vol. ii. 1875, p. 118) another.

⁶ The case is described by Liveing, p. 126.

(Rep. 1876) speaks of the tendency in mild cases to spontaneous cure.

Treatment.—This must be spoken of under two heads,—1st, that of the individual; 2d, that of the population. Since the kings of Egypt are said to have bathed in the blood of slaves, and the Hindoos used cow's urine as a medicine;¹ and eight centuries back, when Psellos recommended the emerald mixed with water, the certain cures, simple and compound, recommended for the disease, would, if merely named, fill a volume. Passing over all others, and simply mentioning arsenic as having been sometimes useful, I will merely consider very shortly Beauperthuy's treatment, and those by chaulmoogra and gurjon oil. Beauperthuy's treatment was almost entirely local, and consisted chiefly in the destruction of the tubercles by castor-nut oil and other irritants. The treatment was severe, and a number of cases relapsed soon after, so that it may now be said to be out of date.

Chaulmoogra Oil is said by Carter² to be of decided utility; under its influence a retrograde metamorphosis of the tuberculous matter is encouraged to take place, "the nodules in the skin do subside, and the sensory nerves more or less regain their function." But it does not prevent the exacerbation of symptoms which comes on suddenly at intervals. Thus, it appears to act by interfering with the effects of the leprous poisoning of the system, rather than by any specific action on the poison or poisonous matter itself.

I may say that in Carter's cases good diet and hygiene were combined with the use of chaulmoogra oil.

Gurjon Oil.—This, in the hands of Dr Dougall, of the Andaman Islands convict establishment, seems, although it may, as Carter says, not be a specific, to have produced better results than any drug yet known, restoring to comparative health those who have suffered for a long time from the disease, even becoming fit for active employment, though they had long been useless. It is best used externally as a mixture of three of lime-water to one of the oil; internally, half an ounce of the same mixture twice a day is given. It should be rubbed in twice a day for about two hours, after the body has been thoroughly washed. The oil acts as a laxative and diuretic. Ordinary diet is given. The oil is not a caustic.³ Thus both chaulmoogra and gurjon oil may be looked on as on their

¹ Wise, pp. 117 and 263, and asses' urine (*Ætius*), see C. Wilson, 1st March 1876. This, though disgusting, would supply the *want of salt* in the food, which I have pointed out as a probable primary cause of the disease.

² Rep. 1876, p. 33. For fuller information, see Macnamara, *op. cit.*, p. 45, and *Med. Record*, vol. ii. 1867; Mouat, *Med. Rec.*, vol. i. 1856, p. 239; and Hobson, *Med. Times and Gaz.*, vol. i. 1860, p. 559.

³ Should any reader, wherever situated, wish to carry out this treatment, he may find the following full references useful:—Dougall, "Gurjon Oil," *Edin. Med. Jour.*, vol. i. 1877, p. 845; *Indian Med. Gaz.*, 1874; *The Doctor*, vol. ii. 1874, p. 157; *Brit. Med. Jour.*, vol. i. 1875, p. 178; E. Wilson, in *Lancet*, 16th May 1874; Carter, Reports, 1876, second series, p. 36; and also, Dougall, in *Med. Times*, vol. i. 1874, p. 683, and vol. ii. p. 586; and Macrae, in vol. ii. 1875, pp. 103 and 118.

trial, which will take some years to give reliable results. With any medicine or without it, good diet and cleanliness have always been found useful.

Change of climate even from one infected country to another, as in one case of Landré's from Portugal to Algiers, is always beneficial, and may arrest the disease indefinitely.

Treatment of the Population.—This, the last division of this work, and, so far as the objects for which it was written are concerned, the most important, as being that to which all I have said in the part on Etiology leads up, I will treat of as shortly as possible, though more fully than the mere sketch which circumstances indicated I should give of the symptoms, diagnosis, etc.

The treatment of any population among whom leprosy is common should be carried out with two objects, the first being to prevent new cases arising from any known or suspected causes of origin; the second, to prevent its spread from already existing cases by contagion or like means.

If I am correct in my idea, that want of salt, combined with a vegetable diet in sufficient quantity, is a primary cause, or the primary cause of leprosy, then everything that can remove such conditions of life should be encouraged. In India this might be earnestly urged on the Government as one out of the many reasons for the remission of the salt tax. Although two millions might be a heavy loss to the revenue (that being the amount raised by it), its remission would be a great gain in the end, as tending to the good of the people; the consequent cheapening of salt would be a blessing to millions, who might then be able to procure a sufficient supply to keep them in health. How heavy this tax is may be roughly estimated, when we consider that one ounce is about the yearly supply for many millions of the poor cultivators, and that the population of British India is roughly 200 millions; so that each 100 persons pay 20s. of salt-tax yearly, or about 2½d. each person; thus, each ounce (so far as *those* consumers are concerned) is taxed to something like fifty times its value. Surely a free breakfast table is yet far off in India when an absolute necessary of life is thus taxed.

To further cheapen food and improve the state of the population, railroads and good roads are the greatest want, the difficulty of carriage making many articles dear in some localities and cheap in others. More perfect irrigation of the country, and great care to prevent the destruction of forests by the Bygás and such other aboriginal tribes,¹ which renders the climate of the surrounding districts too dry, would all be beneficial.

The spread of Christianity, and consequent doing away with the Brahminical prohibition of the use of flesh food, will assist. The use of flesh meat in moderation ought to be encouraged for many other reasons, as leaving the people less liable to death by famine

¹ See Forsyth, "The Highlands of Central India," p. 364.

in times of bad crops, and making them more able to bear such misfortunes by giving them more stamina.

To prevent the spread of the disease when it has arisen, there can be no question that segregation is the best and surest means, whatever be the theory of its spread that we accept, but especially if it is really communicable, and whether it is actually contagious, in the ordinary sense of the term, or simply inoculable, or may be conveyed through water or food.

In St Kitts the great decrease in the number of lepers, both absolute and relative to population, from 95 (in 20,149) to over 53 (in 20,700), that took place between 1817 and 1854 (a period commencing only ten years after the abolition of the slave trade, a traffic which constantly imported new lepers), and during the first two decades of which segregation was strictly enforced by the slave-owners,¹ this great decrease, as compared with the slight relative decrease (if any, but certainly not an increase) from over 53 (in 20,700) to 72 (in 28,000) in 1872, speaks strongly for the value of segregation.

Landré² points out forcibly that under Dutch rule Surinam had far fewer lepers than after it was taken by the English in 1799, and restored to the Dutch in 1816, the Dutch laws having been exceedingly strict in preventing the importation of diseased Africans, while the English had no such laws.

I have already tried to show the effects of segregation in Europe. In Norway, during the last twenty years, the disease has decidedly diminished most in those districts in which the most perfect segregation in hospitals has been carried out,³ and this although only about one-fourth of the leper population are so segregated.

Whether there is any necessity for segregation in the earlier stages of the disease may possibly be questioned, but, in the later, the ulcerative stages, it is the undoubted duty of every government, with the well-being of the population at heart, to insist on such a measure just as strictly as they would against smallpox.

It is sad to think that in any colony of England a leper should be allowed to *keep a school*, as I have seen to my horror in St Kitts. In misgoverned Crete⁴ such things might be, but done in an English colony, with the tacit sanction of the Government, acting under the instructions of the Home Government, themselves instructed by the Royal College of Physicians of London as to the non-contagious nature of the disease, the latter acting on utterly worthless *negative* evidence, so done, such an affair is a disgrace to humanity.⁵

¹ Emancipation took place in 1834, but the slaves remained apprentices till 1838, and it would be some years later before the effects of the freedom of lepers to mingle with others could show themselves.

² *Op. cit.*, p. 6. ³ Carter, 1876, Reports. ⁴ "Col. Phys. Report," p. 65.

⁵ This appears the more forcibly when we see the Spanish Government—one

Such segregation as I advocate should include the entire separation of the sexes, except of those already married, and those only being allowed to live together if arrangements could be made for the *immediate* removal of any children born to them, whose married rights, so far as the circumstances allow, ought to be considered.¹

It has been objected by the Government of India that the expense of segregating over 100,000 lepers in asylums would be too great, but I hardly think this is a proper view of the case. No such asylums need be built, but segregation could still be enforced by the compulsory confinement of lepers to certain spaces of land on which proper villages could be built for them, while they would when able be encouraged to work on the surrounding land. Properly managed, such communities might be partly self-supporting. Of course, after a leper was once put into such a village, a severe penalty should be enacted from any one aiding or abetting him in leaving it; at the same time there could be no harm, I believe, in allowing the lepers, under proper supervision, sometimes to see and converse with their friends at some place near the village, *so long as no contact was allowed*.

Probably over two hundred such villages would be required for the whole of India. Of course medical officers would be required to live near each of them, but the work could be nearly, if not quite, all done by lepers. Such segregation would, I believe, with the other means already mentioned, succeed in stamping out the disease.

In bringing this work to a close, I would beg to say that I have throughout tried to be strictly accurate in all statements made or references quoted; errors may have, and from the great number of references, possibly have been made in the latter as to pages or the like; but if I have in any way thrown new light on the subject, or brought it more within the reach of some to whom information may have been wanting, or, above all, if I have at all assisted in proving that leprosy is a communicable disease, I will feel that my time and labour have been well spent, and, so far as I could expect, my object in spending them gained.

Note.—To any one to whom many of the references given by me may not be available, Neale's *Medical Digest* may be very useful; there are also a few in the *New Syd. Soc. Retrospect*, 1873-4, p. 88.

supposed to be much behind the British in many ways—ready at once to establish a lazaret in Alicant on the disease threatening to spread in that province (*Le Mouvement Médical*, 12th October 1878).

¹ Through the kindness of Dr Semper of St Kitts, I have lately been informed by letter that the two children of Hannah Carty, now 6½ and 10 years old, are still perfectly healthy, though born when she was a confirmed leper. Such examples show that the children of lepers are not always doomed to be attacked, though safer when removed from their parents.

ARTICLE V.—*The Historical Evolution of the Sense of Colour: Refutation of the Theories of Gladstone and Magnus.* By Dr H. DOR of Lyons, Honorary Professor of the University of Berne. Translated by H. M. CLARKE. Memoir presented to the Academy of Science, Belles-Lettres and Arts at Lyons, at the Seance on the 19th November 1878.

(*Extrait des Mémoires de l'Académie des Sciences, Belles-Lettres et Arts de Lyon.*)

It is now long since philologists and commentators on the ancient authors have sought to establish that the descriptions which these authors give of their perception of colour, agree only imperfectly with our present knowledge, and with the sensations which coloured objects produce on our eyes.

To cite only one example, I will mention the article by Mr Gladstone, published in 1858, and entitled, *Studies of Homer and the Homeric Age*. In studying the various occupations of the different expressions that we usually translate by the names of colours, Mr Gladstone arrives at the following conclusions:—

1st, "That Homer, more than any other poet, has made use of all the expressions which describe luminous effects in all their modifications, and in all their degrees of intensity; but that his descriptions and his appellations of the different colours are not only very imperfect, but also very indefinite. That Homer had, therefore, a very defective and indefinite perception of the prismatic colours, which are produced by the refraction of light, as for example, in the rainbow, and still more strikingly in mixed colours."

2d, "That we must seek another basis for his system of colours."

So long as these assertions rested merely on philological data (to which I shall presently revert), philologists were not called upon to occupy themselves with the quarrels of *savants*. But a young professor of ophthalmology at the University of Breslau, M. Magnus, in wishing to explain the hypothesis by the doctrine of Transformism, has just recently put the question in such a way that it demands a new investigation, and recommends itself to the thought and study of all those who are interested in the progress of the natural sciences. The work of Magnus¹ has just been translated into French by M. Jules Loury, and some passages from the translator's preface will serve to show the bearing of the question under discussion. "One of the most glorious titles of modern science," says Loury, "is to have established that the numberless forms of living organisms, far from being fixed and immutable, have been developed in the course of centuries, and have been transformed indefinitely under the action of the forces of Nature. That which is true of the organs is true also of their functions. In every

¹ *On the Historical Development of the Sense of Colour.* Leipsig, 1877.

modification of the form and structure of an organ, there is a corresponding change in its functional activity. The organs of sense have certainly varied like the others, but the anatomical differences in them are sometimes almost imperceptible, and might escape a direct investigation; the evolution or involution of the functions attests at least that the organ is modified.

"The organ of the sense of colour seems to be a striking example of what we advance. Has Nature always presented herself to man under the colours which *we* know? Has man always seen the sky, the trees, and the sea coloured with the same tints which we perceive? In the great theatre of the world, where the scenes shift and the lights change almost every hour, has man *always* been equally conscious of the crimson splendours of the dawn and of the sunset, of the tender green of the young shoots, and the dazzling intensity of the ripe fruits? Most undoubtedly *not*, and the child, the sensitiveness of whose retina still develops itself so slowly from the centre to the periphery, who will gaze with so much pleasure at bright colours, while it is indifferent to vague and undecided shades, the child is our unmistakable evidence of the state through which our remote ancestors have passed. . . . Add the case of constitutional colour-blindness which, as well as all hereditary phenomena, seems to be a kind of organic souvenir of the species."

But we will leave M. Loury to return to M. Magnus. This latter sums up his work by the three following laws:—

1st, "In the history of the evolution of man, there is a period during which a sense of light only existed, the sense of colour being altogether wanting."

2d, "The sense of colour proceeds originally in its development from the sense of light; the incessant excitement of the sensitive parts of the retina under the influence of light has by degrees so increased and perfec'd the functional aptitude of that membrane, that it was eventually enabled to distinguish and to feel not merely the intensity of luminous rays, but also their *colour*."

3d, "The time which the different colours have required in order to affect the retina, as regards specific impressions, is in the inverse ratio of the active force which they possess; in other words, the greater the quantity of colour, the sooner the colour has made itself felt by the retina; the smaller the quantity, the longer the time which the retina has required to distinguish and feel it. It has therefore required a shorter time for the colours of a strong luminous intensity, and a longer time for those of a lesser intensity to affect the retina and cause a sensation of a special nature on it."

Thus, according to Magnus, the historical development of the sense of colour has followed the order of the colours of the spectrum, as shown by Newton. At first man has seen only the light and the dark; little by little came the notion of red, later on of orange, then of yellow, and so on to violet. Magnus goes even

further; he does not hesitate to give a precise historical date to this evolution of the sense of colour. "It is not very difficult," he says, "to determine historically the epoch during which the sense of colour consisted merely in seeing red and yellow, whilst all the other shades were still not perceived as distinct and special modifications of the sensation, and remained confounded in the notion of luminous intensity. The Homeric poems furnish us with exact and very instructive information just concerning this period.

"The designations of colours which one meets with in these poems proves in the most unmistakable manner that at that time the human retina could only recognise and feel according to their real chromatic value the colours which are rich in light, whilst colours of a medium or inferior intensity of light—such as green, blue, violet—did not yet affect the eye with a distinct act of sensation; green was confused with the notion of pale yellow, *χλωρός*; blue and violet with that of darkness—*κνάνεος*."

"The use of expressions for the prismatic colours is altogether absent from the Homeric poems, as Mr Gladstone has demonstrated, whilst, on the contrary, the connexion which different coloured objects (just because of their different coloration) have with luminous intensity, and with absolute quantity of light, are marked by numerous and varied expressions, thus: *λευκός*, bright; *μαρμάρεος*, sparkling; *γλανκός*, shining; *σιγάλοις*, white; *αἰόλος*, many-coloured; *ἀργός*, dazzling; *φαινός*, radiant; *αἶθος*, glittering; *αἶθων*, also glittering; *μέλας*, black; *πολιός*, whitish-gray; are so many expressions, which serve only to indicate the intensity of light perceived."—*Magnus*, p. 24.

Encouraged by the works of Magnus and of Geigos,¹ who draws similar conclusions from the study of the most ancient books,—the Bible, the Vedas, the Zend-Avesta,—Mr Gladstone revised his former researches in this light, and published in the *Nineteenth Century*, 1877, a new article on the sense of colour. In this last article, to which we must refer our readers for details, Mr Gladstone studies in Homer all the meanings of the following expressions: *φοῖνιξ*, *πορφύρεος*, *έρνθρός*, *κνάνεος*, *χλωρός*, etc.; and he comes anew to the conclusion that not one of our actual names of colours corresponds exactly with the idea which, according to the *Odyssey* and the *Iliad*, Homer must have had of colours.

If it were merely a question of ascertaining whether *Homer* was colour-blind, or even altogether blind, as is averred, we should not have to deal with it; but now-a-days that is not all; we are told that where we see colours, man, in *Homer's* time, could only distinguish differences of luminous intensity, or, at the utmost, he knew red and yellow. Colours of a lesser intensity, such as green, blue, and violet were not perceived, just as now we do not see the ultra-violet rays. Magnus goes even further, and main-

¹ *On the History and Development of Mankind*, 1871, and *Origin and Development of Human Speech and Reason*, 1872.

tains that the human eye will yet become more perfect, and that at a time more or less distant it will distinguish the ultra-violet rays, which to us are invisible.

But, if the doctrines of transformism are seductive, and can be supported for prehistoric ages, I do not think that the study of historic ages has up till now furnished a single positive datum in their favour. Let us examine the actual facts on which Magnus bases his conclusions.

As a first proof in support of his assertions, M. Magnus quotes from Xenophon, who recognises only three colours in the rainbow:—"Ἦν τ' Ἴριν καλέουσι νέφος καὶ τοῦτο πέφυκε πορφύρεον καὶ φοινίκεον καὶ χλωρὸν ἰδέσθαι." "That which they call Iris (the rainbow) is a cloud, purple-red and greenish-yellow."

In my opinion this description does not seem to be much at fault, even in taking into account our actual perception of colours; and more than one of our contemporaries, provided he has not been taught Newton's doctrine of prismatic colours, but is guided entirely by his own appreciation, would not find a better. Besides, even at this day, Newton's doctrine is not wanting in detractors, be they the supporters of the theory of Goethe, or those who hold yet another idea of the primitive colours. Moreover, we must not forget that Xenophon (B.C. 617-517) had an altogether peculiar conception of the world. He was the founder of Pantheism, and according to him the world proceeded from two elements, earth and water; he taught that stones were condensed clouds, the sun a fire, which was kindled every morning and extinguished periodically. His description of the rainbow is therefore at least as accurate as his other notions of the universe. The description of it given by Ovid, who calls it "The arch of a thousand colours," whilst it is more poetical, is not any more precise.

But Aristotle's is the most exact. He distinguishes red, *φοινικός*; green, *πράσινος*; and blue-violet, *ἀλουργός*; but he expressly adds, "Between the red and the green there is often to be seen yellow," *τὸ δὲ μεταξὺ τοῦ φοινικοῦ καὶ πρασίνου φαίνεται πολλάκις ξανθόν*.

In no case can we pronounce these observers to be colour-blind, as Magnus does. If we would have an idea of the way in which persons who were really colour-blind would represent the rainbow, we ought to see a large picture of the Deluge in the Museum at Amsterdam, in which the artist (whose name I unfortunately cannot recall) has painted the rainbow in two colours, *yellow* and *blue*. It is, in fact, thus that colour-blind patients see it now. In order to ascertain exactly the manner in which our illiterate contemporaries would describe the rainbow, I one day asked all the patients in my *clinique* to tell me the colours which they remembered to have seen in that arch. I chose my *clinique*, because there at a gratis consultation I have only patients from the lower bourgeois class, workmen and peasants, who, I might at least suppose (and the result of my examination will prove the correctness

of my supposition), had not received even the most elementary notions of natural philosophy at school. I must also mention that in a town like Lyons all the workmen, who far and near work at silk manufacture, are largely experienced in the knowledge of colours.

Of forty-three persons who came under my examination, four only indicated the seven colours, and in this number were included two doctors who assisted me, one of whom declared that he had never seen the indigo in the rainbow, though he named it in accordance with theory, Total, 4

Only two persons indicated five colours:—

1	violet, blue, green, yellow,	—	red,			
1	—	blue, green, yellow, orange,	red,	.	.	Total, 2

Thirteen indicated four colours—

5	—	blue, green, yellow,	—	red,		
2	—	blue, —	yellow, —	red, —	white,	
1	violet,	blue, —	—	—	red, rose, —	
1	—	blue, —	yellow, —	red, rose,	—	
1	—	blue, —	—	orange, red, —	white,	
1	—	—	green, —	—	red, rose, white,	
1	—	—	green, yellow, —	red, —	white,	
1	—	blue, green, yellow,	—	—	rose, —	Total, 13

Seventeen named only three colours—

6.	—	blue, green, —	—	red, —	—	
5	—	blue, —	—	—	red, —	white,
2	—	blue, —	yellow, —	red, —	—	—
1	violet,	blue, —	—	—	—	rose, —
1	—	blue, —	yellow, —	—	—	rose, —
1	—	blue, —	yellow, —	—	—	whitish,
1	—	—	green, —	—	red, —	white,
						Total, 17

Five saw only two colours—

2	—	blue, —	—	—	red, —	—
1	violet,	—	—	—	red, —	—
1	—	blue, —	yellow, ¹	—	—	—
1	—	—	green, —	—	red, —	—
						Total, 5

Two said they did not remember the colours,	.	Total, 2
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Total,	43
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Now, if we add up the sum of the colours indicated, including the four cases in which the seven prismatic colours were perceived, we find that blue is named 35 times, as is also the red, then comes yellow, 24; green, 23; white, 11; violet, 9; orange and rose, 7;

¹ This was not a case of colour-blindness.

and lastly, indigo, 3 times. It is therefore very evident that the unlettered class of our population is not in our own days much further advanced than Xenophon's, and the average is far inferior to Aristotle's. The hypothesis of Magnus and Gladstone is based, besides, on the assertion that in the most ancient books of the Bible, in Homer, in the hymns of the Vedas, and in the Zend-Avesta, no expression adapts itself exactly to our actual denominations of colours; that, moreover, in several passages the same word cannot signify the same colour (thus, for example, *πορφύρεος*, which Homer uses as an epithet for different matters, for the rainbow, for blood, for the clouds, for the sea, for the waves, for death, etc.); that in those works there is never any mention of the blue sky, the blue sea, or the green fields. I must, however, quote here several texts from the Old Testament which will hardly admit of another translation. Thus for red, Genesis xlix. 12, "His eyes shall be red with wine, and his teeth white with milk;" Proverbs xxiii. 31, "Look not thou upon the wine when it is red, when it giveth his colour in the cup;" Isaiah i. 18, "Though your sins be as scarlet, they shall be as white as snow; though they be red like crimson, they shall be as wool;" Isaiah lxiii. 2, "Wherefore art thou red in thine apparel?" In the 26th, 27th, and 28th chapters of Exodus we find several expressions which have been translated by purple, scarlet, crimson, red, and blue; but here it is difficult to say what is meant, only when, as in the 26th chapter and 1st verse, they follow one another: "Moreover, thou shalt make the tabernacle with ten curtains of fine twined linen, and blue, and purple, and scarlet," we must admit that three colours, or at least three different shades are understood.

Magnus and Gladstone maintain that green was not perceived as such in the times of Homer. If so, how then translate the 30th verse of the first chapter of Genesis: "I have given every *green* herb for meat" (*χόρτον χλωρόν*, LXX. version)? and Genesis ix. 3, "Every moving thing that liveth shall be meat for you, even as the *green* herb have I given you all things?" Let us further quote the following passages: Isaiah lvii. 5, "Under every *green* tree;" Jeremiah xvii. 2, "And their groves by the *green* trees upon the high hills;" and 8th, "For he shall be as a tree planted by the waters and shall not be seen when the heat cometh, but his leaf shall be *green*;" Ezekiel vi. 13, "And under every green tree and under every thick oak, the place where they did offer sweet savour to all their idols." I have quoted this last passage in order to answer at the same time another objection of Magnus, who holds that good and bad smells were not perceived any more than colours.

I will not dwell any longer on these philological proofs, as it is evident that one might spend years in discussing the real signification of a word without settling the matter, especially when it is a question of expressions borrowed from the poets or from poetical compilations.

Are there not, moreover, numerous expressions in the present French language which would give us the same right to conclude that the French people of the nineteenth century are destitute of the normal sense of colour? Do we not speak of *vin blanc*, of *pain blanc*, of *viandes blanches*, of *la race blanche*, even of *nuits blanches*, of *raisins rouge*, of *vin rouge*? "He is wicked;" they say, "*Comme un âne rouge*" (Littre). And is it a question of definite colour when the French talk of *un bas bleu*, of *un conte bleu*, *une peur bleue*? This last expression is exactly equivalent to the one used by Homer, *κλωρόν δέος*, "a green fear."

According to Littre, our word "red" comes from the Sanscrit *rad-hira*, whence comes also the Greek *ἐρυθρός*; and the word *vert* from the Sanscrit *harit*, or, according to Burnouf, from the Zend *zairi*.

It would be easy to multiply such examples to an indefinite extent, and to cite largely from the poets in support of our argument.¹

The celebrated caricaturist, Grandville, has made an attempt to paint a woman according to a poetical description. This is how he expressed it:—"Her brow was of ivory, her eyes of sapphire, of ebony her hair and eyebrows, her cheeks were roses, her lips of coral, pearls her teeth, and her neck a swan's!" Try to imagine this picture, and you will have an idea of the notion which our descendants will be able to form of our present beauties.

In searching through the French poets for all the expressions bearing upon the vision of colours, I have been struck by the same fact which Mr Gladstone always remarked in Homer, viz., the frequency of expressions used to describe luminous intensity, and the small number of indications of colours properly so-called.

As Messrs Magnus and Gladstone have no other proof in support of their hypothesis but such poetical descriptions, I have wished to show that our modern poets are at least quite as colour-blind as humanity at the time of Homer; and I do not know that Gladstone has cited anything on this point to be compared with the "*Azure of her eyelids*," that Lamartine speaks of. It is therefore impossible to draw conclusions on the subject of this sense of colour from expressions used by the poets. Neither does the use of one and the same word for two different colours entitle us to come to such conclusions as Magnus and Gladstone have done, because here at this day we find peoples who have only one name for two colours. Thus the Anamites of Saïgon (a city of Cambodia), and in the whole of Cochin-China, use *xanh* (pronounced *xiane*, *κυάνεος*?) for green and for blue; only they add the special qualification *xanh troi* (*xanh*, like the

¹ "Will all great Neptune's ocean wash this blood
Clean from my hand? No; this, my hand, will rather
The multitudinous seas *incarnadine*,
Making the green—one red."—*Macbeth*, Act ii. sc. 2.

sky) for blue, and *xanh tre* (*xanh*, like the bamboo) for green. So that I think, that although the quotations of Mr Gladstone, of Geiger, and of Magnus may have a great philological and literary interest, they are altogether inadequate to support the theory that our ancestors of the Homeric age had a different sense of colour from our own; and I will now pass on to other proofs which show conclusively "*that even in the most remote historic ages—that is to say, in the time of the Assyrians and ancient Egyptians—the sense of colour was developed to the same extent as it is now.*"

I might recall the town of Ecbatana, the seven walls of which were each of a different colour, "according to the seven planets," to wit, white, black, purple, blue, orange, silver, and gold. I might cite the celebrated purple of Tyre, the commerce in which was once so important that historians tell us that 5000 quintals of it were found in the ruins of Babylon. But here also the exact value of terms might be disputed, and I prefer to come to more positive proofs.

All those who have visited the ancient temples of Egypt have been struck by finding how admirably they are preserved, even down to the most minute details. This state of preservation is due to the fact that no sooner were those edifices uninhabited and deserted than every gust of wind covered them with a fresh layer of fine and dry sand. All the Egyptian antiquities have been in this way protected against the influences of the weather and the damp; and we find them at the present time in such a perfect condition, that it is difficult to form an idea of it without having examined them on the spot. For example, I have seen at Memphis, in the temple of Ti, the numerous and finely sculptured and coloured scenes which, covering the whole of the interior walls of the building, initiate us into the entire life of that god. The colours are everywhere preserved, and agree perfectly with our present notions, as indeed every one may ascertain for himself from the specimens of Egyptian work at the British Museum, in the Louvre, and in the Royal Museums at Berlin, Turin, at Cairo, and at Boulak. I might name from memory the various colours, but lest I should make any involuntary mistakes, I prefer to borrow from a work published in chromolithography as far back as 1865, and entitled *The Grammar of Ornament*, by Owen Jones (London: Day & Sons). "The architecture of the Egyptians is perfectly polychromatic. There is nothing which they have not painted. . . . The colours which the Egyptians principally used were red, blue, yellow, with occasional black and white. Green was generally, though not universally used as a local colour from the green leaves of the lotus, for instance. The leaves, however, were coloured without distinction either green or blue; the blue was used in the most ancient times, and the green during the time of the Ptolemies, at which epoch purple and brown were even added. The red, which is found on the tombs and on the

cases of the mummies of the Greek and Roman periods, is weaker in tone than that of the ancient times, and it seems to be a universal rule that during the archaic periods of art, the primary colours—blue, red, and yellow—are those which predominate, and which are used with the greatest harmony and success; whilst in the periods during which art was practised traditionally rather than instinctively, there is a tendency to use secondary colours, as also all the varieties of tint and shade, but rarely with the same success.

As to colours, the Assyrians seem to have used blue, red, white, and black on their painted ornaments; blue, red, and gold on their sculptured ornaments; and green, orange, buff, white, and black for their enamelled bricks. But our knowledge of these colours does not end here. We possess chemical analyses which have been already published in 1828 in the appendix to the journey of General Minutoli.¹ These analyses, made by Professor John, give us the following results:—Without wishing to discuss here whether the ancients must have produced the colours which they used to give the effects of light and shade as well as the different modification of tints, by making use of many of the primitive colours, or whether, on the contrary, they employed as many colours as they could find in nature, or as their art enabled them to produce, I will content myself by communicating the results of some chemical researches on their theory and their knowledge of colours. . . . These results prove to us that they not only knew the use of natural colours, but also how to produce them by mixture. The colours analyzed are as follow:—

1. *Green* (Thebes).—The colour lies between vegetable green and mountain green (carbonate of copper). It is composed of a yellow vegetable pigment, and a copper blue.

2. *Greenish Blue* (Memphis).—This colour is simply a copper blue, which must have been originally blue and become greenish from atmospheric influences.

3. *Pale Azure Blue* (Thebes).—Oxide of copper, silica, soda.

4. *Dark Azure Blue* (Memphis).—The same composition as the preceding.

5. *Mountain Blue*.—Ditto.

6. *Brown* (as in the complexion of an Egyptian girl).—Oxide of iron, brown, red, with a little chalk.

7. *The Brick Red of Fresco Painting*.—Analysis proves that the ancients put a coating of fine lime or chalk on the walls of the catacombs, and then painted with a mixture of red oxide of iron and of Punic wax.

8. *Brown Red*.—Oxide of iron.

9. *Yellow* (Thebes and Abydos).—The colour is very pure, of a bright sulphur yellow, and is made from a vegetable dye.

¹ *Travels to the Temple of Jupiter Ammon in the Libyan Desert, and to Upper Egypt, in the Years 1820–21.* By Henry Baron de Minutoli. Extract communicated by August Rucker. Berlin, 1828.

Professor John has also analyzed these specimens of coloured glasses:—

1. *Blue Glasses of Memphis*.—These colours are very pure, sky-blue or azure; they are opaque or diaphanous, and produced by oxide of copper, with some traces of oxide of iron.

2. *Blue Glasses of Thebes*.—The colour is dark ultramarine; the glass is semi-transparent, and transparent in the little fragments. According to the analysis, this glass is made with silica, soda, lime, etc., and a little oxide of cobalt, with also some traces of iron. We can see from this the great antiquity of the use of this metal in the art of colouring.

3. *Violet Glass of Memphis*.—Transparent—amethyst colour. The analysis shows that the coloration of this glass is due to the use of oxide of manganese. The rich collection of the Baron de Minutoli also contains several kinds of ancient tissues manufactured from flax *wool*:

One kind is pale yellow (probably coloured with henna leaves); a second is yellow-brown (coloured perhaps with fluid extract of madder, with an addition of henna leaves or tamarind); a third is chestnut-brown, probably like the latter, with an addition of tar; lastly, a fourth, dark red flesh colour. There is no doubt that this flax is dyed with madder."

From the foregoing facts, I conclude that the most ancient people historically known—the Egyptians—not only saw, but exactly imitated the following colours:—green, green-blue, bright azure-blue, dark azure-blue, mountain blue, brown, brick-red, brown-red, yellow, pale yellow, brown-yellow, chestnut-brown, dark flesh-red, and violet. They also knew the use of the salts of iron, of copper, of manganese, and of cobalt.

It is difficult to determine exactly the ages of the different literary sources which Magnus and Gladstone have drawn from. The dates and doctrines of the four Vedas are very different. They claim (especially the first three) to have been inspired by Brahma. According to these data (possibly legendary), they were rearranged by Vyassa, who compiled them in the fourth century B.C. The Zend-Avesta—or doctrine of Zoroaster—goes back, according to some, six centuries, to others to thirteen centuries B.C. Homer must have lived in the ninth or tenth century B.C. (907, according to the marbles of Paros). Lastly, Moses is said to have lived from 1725 to 1608 B.C. Now, at that time Rameses was at Memphis, to which place the kings of the 18th and 19th dynasties had transferred the seat of government, whilst the temple and palaces of Thebes were built by the Pharaohs, who are to be traced as far back as the 21st dynasty. The colours of which the above analysis has been made are at least six or seven centuries more ancient than Homer—perhaps even 1000 years more ancient than Moses.

I think I have thus (at least as far as concerns historic times)

refuted by positive facts the hypothesis of Magnus and Gladstone, of an historical evolution of the sense of colour. "Facts are now-a-days the power held in honour" (Guizot).

It would be easy to dispute for hours on each of the assertions which I have contested *en bloc*. We should like to see whether the real signification of *πορφύρεος* is "dark," and that of *κνίαντος* "bronze colour," and whether *γλαυκῶπις* means "bright-eyed," as Mr Gladstone maintains; but a remark of M. Émile de Montégut warns me in time. "Our fathers," he says, "had time to verify their judgments on a writer, and to discover, under the dense cloud of *ennui* in which he too often enveloped himself, the qualities which distinguished him, and the truth which his writings contained; but the active and turbulent gods who control our age have denied us that leisure. If, then, you have some valuable truth to tell to man, some just idea to pass on, regulate your conduct by this principle—that your listeners are in a hurry, and that they will find you a 'bore' if you have not the art to make them forget the precious minutes which are flying whilst they are listening to you."¹

ARTICLE VI.—*Note on the Active Treatment of Severe Cases of Primary Keratitis.* By GEO. A. BERRY, M.B.

WITH the exception of Sæmisch's operation for *ulcus corneæ* serpens, no very active treatment of keratitis can be said to be in general use amongst ophthalmic surgeons, who, as a rule, are contented with the instillation of atropine and the use of warm or cold applications. So far as any action which atropine may have on the primary disease—*i.e.*, the inflammation of the cornea itself, in whatever stage—is concerned, we believe that most surgeons will agree with us that, except in the few cases where, from irritation of the conjunctiva, etc., it is absolutely hurtful, the treatment with this agent is little more than palliative and expectant. That a similar view is entertained by many is evidenced by the way in which the introduction of eserine for the treatment of corneal inflammation has been received by the profession, especially in Germany. Eserine, being supposed to have the property of diminishing intra-ocular tension previously ascribed to atropine, is by many employed to the exclusion of the latter, which is condemned as worse than useless by those who, recognising the many antagonistic actions of these two drugs, are led to assume an antagonism also in their respective effects on intra-ocular tension. It must be admitted that they have some feeble grounds for their assumptions, as, on the one hand, eserine has been found, both on the Continent and recently

¹ *Revue des Deux Mondes*, 1860, p. 981.

also in this country, to have a beneficial action in glaucoma, whereas, on the other hand, an attack of glaucoma is undoubtedly occasionally seen to follow the use of atropine. As long, however, as we remain ignorant of the true cause of glaucoma we cannot assume that any agent (we exclude, of course, operative interference) which diminishes or increases the severity of the symptoms does so by directly diminishing or increasing intra-ocular tension, although changes in tension necessarily accompany improvement or deterioration. Because, therefore, eserine, rightly or wrongly, is believed to be followed by diminished tension when used for the treatment of glaucoma, while increased tension follows the use of atropine under similar circumstances, we are not justified in at once ascribing to these agents similar actions in cases unaccompanied by any glaucomatous condition. Until, therefore, we have the means of making more delicate tonometric measurements we cannot ascribe much importance to the statements made as to the effects of atropine and eserine on modifying intra-ocular tension.

One of the great objects held in view, however, in the treatment of keratitis has been the diminution of intra-ocular tension; but even should a demonstrable diminution accompany the use of atropine or eserine, it is difficult to see how this could materially influence the state of inflammatory tension in the cornea itself, which gives rise in so many cases to destruction of its tissue. Indirectly, by implication of the sources or passages from which the cornea receives its nourishment, this might be suspected did we not know that the vitality of the cornea remains unimpaired within very considerable limits of intra-ocular tension. Nevertheless there are many cases of keratitis in which, at some time or other, the use of atropine or eserine is decidedly beneficial. Although no effect on the primary inflammation results from their use, still it will be evident to every one that these agents are invaluable in the treatment of some complications. Thus in the use of atropine we have a powerful means of preventing the formation of posterior synechiæ, whilst in cases of threatening perforation of the cornea the timely use of eserine will often prevent the occurrence of prolapse of the iris. Here, then, we are able successfully to combat the dangers and avert the consequences of complications by taking advantage of our actual knowledge of the actions of each.

In some cases, also, atropine acts so powerfully as an anodyne that its use may be advocated on the grounds of its local action on the nervous system alone. As a general rule, however, its sedative action is slight.

We had occasion, during a stay at Copenhagen, to see put in practice on a large scale, at Dr Edmund Hansen's clinic, two little-known active methods of treating the severer cases of corneal inflammation—cases in which the destruction (suppuration?) taking place at the circumscribed focus of inflammation had a tendency to spread and involve more and more of the healthy tissue.

We have long been looking forward to some improvement in the treatment of corneal abscess, and cannot but think that means which in very many cases indeed enable us to arrest the progress of these severe forms of inflammation, even of such which, in strumous subjects, we see otherwise converting in the space of a very short time the entire cornea into a mass of slough, must be looked upon as a decided advance. Dr Hansen, in a paper on the classification and treatment of keratitis,¹ has already described the methods lately employed so extensively in his practice. His paper having, however, been published in Danish, will probably not have come under the notice of many in this country. On this account, therefore, and having had abundant opportunity of seeing the results, and being fully convinced of the efficacy of the active treatment adopted in many cases, we feel called upon to bring this subject before the profession, in the hope that the treatment adopted at the Copenhagen clinic may receive at the hands of English surgeons as widespread a trial as it undoubtedly deserves.

The two methods employed are, (1) the application directly to the cornea of a strong solution of nitrate of silver (10 grs. to ℥i.); and (2) the actual cautery.

The first, which we believe has also for some years past been used by Liebreich, is far less irritating to the cornea than is generally supposed. Many cases of suppurative keratitis which have resisted the ordinary means of treatment improve so rapidly after the application of a 2 per cent. solution, applied quickly over the whole cornea with a camel's-hair paint-brush once daily for two or three days, that one would have to be very sceptical indeed not to ascribe the improvement to the application. But there is one class of cases in which this treatment is invaluable, viz., in incipient suppurative infiltration of the corneal wound after cataract extraction. We extract the following description of the treatment in these cases from Dr Hansen's paper:—"Whilst with the means usually adopted—compression, alternating with poulticing, local application of solution of quinine, etc., etc.—I have hardly ever succeeded in arresting such a suppuration and preventing its transition into panophthalmitis, I have very frequently indeed successfully combated this danger by the use of nitrate of silver in solution, many of the cases so treated retaining vision. Such suppurative infiltrations, which undoubtedly imply infection of the wound, begin generally thirty-six to forty-eight hours after the operation—the first sign being a milky appearance in the neighbourhood of the incision; otherwise everything appears as yet perfectly normal, but the upper eyelid soon becomes the seat of an oedematous swelling, giving rise at the same time to a thin secretion which escapes on opening the eye. Then follows a dimness of the aqueous humour. If, immediately after the commencement of this abnormal secretion, we boldly brush the nitrate of silver solution

¹ *Hospitals Tidende*, 2 Række vi., No. 11.

over the wound, the secretion, as a rule, diminishes at once. Generally it is necessary to apply the solution twice daily, as the secretion, after the lapse of a few hours, begins again to increase. This treatment does not prevent the infiltration, but it spreads slowly, and generally ceases after a few days. Often one cannot prevent the extension from the corneal infiltration of a mass of exudation over the pupil, which seldom becomes so completely absorbed as to render an after operation unnecessary; but the eye is saved, and there remains the possibility of attaining vision by a second operation which may even be sufficiently acute to permit of the possibility of reading. I do not deny that I was at first rather timid about the use of such a strong agent so soon after the operation, fearing that the suppurative process might thereby be hastened. I am now so convinced of its excellence that I never hesitate in employing it as soon as suspicious symptoms present themselves."

The actual cautery was first used in connexion with corneal inflammation by Gayet. A knitting-needle, heated to redness in a spirit-lamp, is applied to the centre of a circumscribed abscess or infiltrated ulcer, the eye being in the meantime fixed to ensure its correct application. The improvement which takes place in all cases is, as a rule, exceedingly rapid and apparent, and the pain during the cauterization insignificant, and afterwards *nil*.

The beneficial action must, we suppose, be due to the relief of tension in the corneal tissue, and perhaps also to the protective action of the eschar.

In these two means of treatment an aim is, at any rate, made at local effect. It is difficult to say for what class of cases each is most suitable, but it appears to us that the actual cautery is more certain in strumous cases. Possibly in such cases there is a more urgent call for the relief of tension, the power of resistance being weak.

ARTICLE VII.—*Observations on some points in Dextral Valvular Disease of the Heart, being a Graduation Thesis.* By ALEXANDER MORISON, M.D. Edin., of London.

(Continued from page 114.)

PART II.

WITH this object I have composed the following table, which will show at a glance the comparative weight and dimensions of the heart in the two classes of animals. The measurements of sheep No. 1 were taken three days after death by "sticking," to allow the rigid systole of the heart to relax, that it might the more easily be overcome by gentle stretching; those of sheep No. 3

Animal.	No.	Weight of animal (in case of sheep including wool).	Weight of blood effused.	Weight of heart.	Length of right ventricle.	Length of left ventricle.	Circumference of right ventricle.	Circumference of left ventricle.	Length of right auricle.	Length of left auricle.	Circumference of base of right auricle.	Circumference of base of left auricle.	Diameter of walls of right ventricle.	Diameter of walls of left ventricle.	Diameter of right auricle.	Diameter of left auricle.	Diameter of septum ventriculorum.	Diameter of lumen of right ventricle.	Diameter of lumen of left ventricle.	Circumference of tricuspid orifice.	Circumference of mitral orifice.	Circumference of pulmonary orifice.	Circumference of aortic orifice.	Condition of heart when measured.	Proportion of weight of blood to weight of body in sheep.	Proportion of weight of blood to weight of body in man.	Proportion of weight of heart to body in sheep.	Proportion of weight of heart to body in man.	Remarks on measurements of sheep.	Remarks on measurements of man.				
Man (male).	10	10 st. 12-27 3/4 lbs. to 11 oz.	92 oz. to 11 oz.	84-8	65-4	188-1	119-9	...	...	...	122-2	109-1	2 to 4	8 to 11-4	...	...	11-0	...	...	122-2	109-1	71-0 above valves.	69-6 above valves.	...	...	...	...	...	...	...	...
3	9	9 st. 4 lbs. 1 lb. 4 oz. 5 drs.	8 oz. 5 drs.	80	65	80	90	75	30 to 35	25 to 35	90	80	1 to 3	9 to 20	2	...	30 by 4	15 by 16	90	80	70	...	Sys- tole.	As 1 is to 196.	11 oz. is to 140 lbs. as 1 is to 203.	10 oz. is to 140 lbs. as 1 is to 224.	17 1/2 lbs. is to 140 lbs. as 1 is to 8.	6 or 8 lbs. is to 122 lbs. as 1 is to 15 or 20.	17 1/2 lbs. is to 140 lbs. as 1 is to 8.	As 1 is to 196.	11 oz. is to 140 lbs. as 1 is to 203.	10 oz. is to 140 lbs. as 1 is to 224.	Other measurements of sheep No. 2 were all greater than those of No. 1, but were not minutely noted. Those of No. 4 not taken. Average weight of the four sheep, 8 st. 10 lbs. 10 oz.; of their effused blood, 4 lbs. 8 oz. 2 drs.; of their hearts, 10 oz. 1 dr. 15 grs.	Proportion of heart to body is, according to Held, 1 : 169-173. Glendinning, 1 : 158. Tiedeman, 1 : 160.
Sheep.	1	7 st. 4 lbs. 4 lbs. 8 oz.	9 oz. 6 drs.	40	55	40	90	90	30 to 35	20 to 35	100	90	1 to 4	15 to 20	1 to 7	15 to 18	60 by 11	25 by 25	100	90	60	60	A Sys- tole.	...	...	...	...	...	...	...	...

were taken seven hours after death, caused in a similar manner, and therefore during systole. As regards man, I have assumed 10 stones as the average weight of a healthy male. The weight of the blood effused by the latter is taken from the estimates formed by Weber and Lehman in the case of two criminals who were decapitated, and mentioned by Dalton in his treatise on *Human Physiology*, p. 215, ed. 1867. Were I to base my estimate of the amount of blood in the body of the sheep on the results of Weber and Lehman's investigations, the average would only amount to about $5\frac{1}{2}$ pounds; but as the process of "sticking" a sheep and of decapitating a man are not identical, and as in the latter case greater facilities are afforded for the escape of blood from the cervical vessels, it is probably right to assume that the blood effused in "sticking" a sheep does not bear the same proportion to that which remains in its body, as does the blood which flows from the cervical vessels of a decapitated man to that left in *his* vessels. I have, therefore, broadly estimated the average of the whole quantity of the sheep's blood at from 6 to 8 pounds, but have no data to prove even the approximate correctness of this calculation.

The various estimates of the average weight of the male human heart will be found stated in Quain's *Anatomy*, vol. i., p. 321, seventh ed. 1867, where the proportionate weight of the male heart to the body is also given. If we assume that Dr John Reid considered 11 ounces to be the average weight of the male heart, and 1 to 169 or 173 the proportion which the weight of the heart bore to that of the body, we must assume that he considered the average weight of the body to be between 8 and 9 stones, for the proportion which 11 ounces bears to 140 pounds, or 10 stones, is as 1:203; and if we assume the average weight of the male heart to be 10 ounces, and the average weight of a healthy man 10 stones, we get the ratio of 1:224. To justify my assumption of 10 stones as the average weight of a healthy male, I may direct attention to the fact that Mr Gathorne Hardy, Secretary of State for War, stated in his speech during the discussion of the Army Estimates, on March 4, 1878, as reported in the *Daily Telegraph* of March 5, that 1452 men taken from 21 different corps, and whose average age was 20 years and 1 month, weighed on an average 10 stones 7 pounds.

The exact measurements of various parts of the human heart are those given by M. Bizot in his "*Recherches sur le cœur et le système artériel chez l'homme*," *Mémoires de la Société Médicale d'Observation de Paris*, 1836; transcribed by Hasse in his *Anatomical Description of the Diseases of the Organs of Circulation and Respiration*, p. 158, Sydenham Society's edition, and reduced by Dr Moore to English measure for Dr Stoke's work on *Diseases of the Heart and Aorta*, p. 257, note; 1854. I have adhered throughout to the measurements of the male heart, and have reduced Bizot's calculations to the metrical scale, to be in conformity with the measurements given of the sheep's heart. On examination the table

will show that the sheep, though an animal having a less average weight than man, possesses a heart of almost the same average weight as the latter; and, moreover, that the main distinction between the hearts of the two animals is, that while the capacity of man's heart is greater than that of the sheep, the muscular power of the heart of the latter, as indicated by the diameter of the walls of the various cavities, is as undoubtedly greater than that of the former. That the capacity of the sheep's heart should be less than that of man's is what we might expect from the smaller quantity of blood circulating in that animal, but this circumstance increases the importance of the fact that the muscular power of the lower animal is still proportionately greater than that of man. It is the investigation of the causes of this muscular preponderance in the sheep's heart which will, in my opinion, assist us to solve the problem of the means best adapted for the due propulsion of an impeded circulation.

The principal vascular channels in the circulatory apparatus of the sheep may be considered horizontal, the chief exceptions being the vessels which supply the limbs, the cranium and its contents, the testicles, and the lungs.

The principal vascular channels in the circulatory apparatus of man may, on the other hand, be considered perpendicular. The first effect of this grand difference may be demonstrated by the following simple experiment, in which the propulsive force of the left ventricle is excluded. (Figures 2 and 3.)

A and B are bottles with an outlet and neck at the base A' and B', to which tubing of the same length and calibre C and C' is attached. C is horizontal, C' is perpendicular. The bottles A and B contain water, and are corked. When these corks D and D' are removed, water begins to fall in the bottles, and circulates through the tubing, but issues decidedly more forcibly at the orifice O' of the tubing C' than at the orifice O of the tubing C, in accordance with that law of hydrostatics which states that the pressure in each layer of fluid is proportioned to its depth, and that the upward pressure of a column of liquid is governed by the same laws as the downward pressure; the depth of the column of fluid in C' is manifestly greater than in C, and hence the result.

This experiment represents the vascular system in the sheep and in man respectively, excluding, as I have already stated, the heart,—the imaginary points taken being the commencement of the descending aorta, and the entrance into the right auricle of the vena cava inferior. Hence, without considering the effect of the propelling power of the heart in either case, we may conclude that the horizontal circulation of the sheep, on hydrostatic principles, would empty itself less forcibly into the right auricle than the perpendicular circulation of man. As, however, every animal to be healthy must have a circulation adapted in vigour to the necessities of its own body, and to the medium in which it exists, and,



Fig. 3.

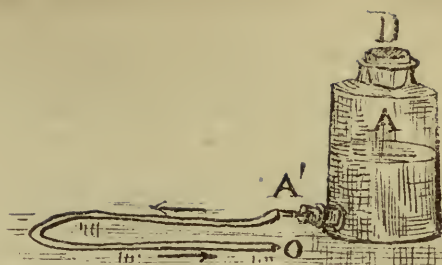


Fig. 2.

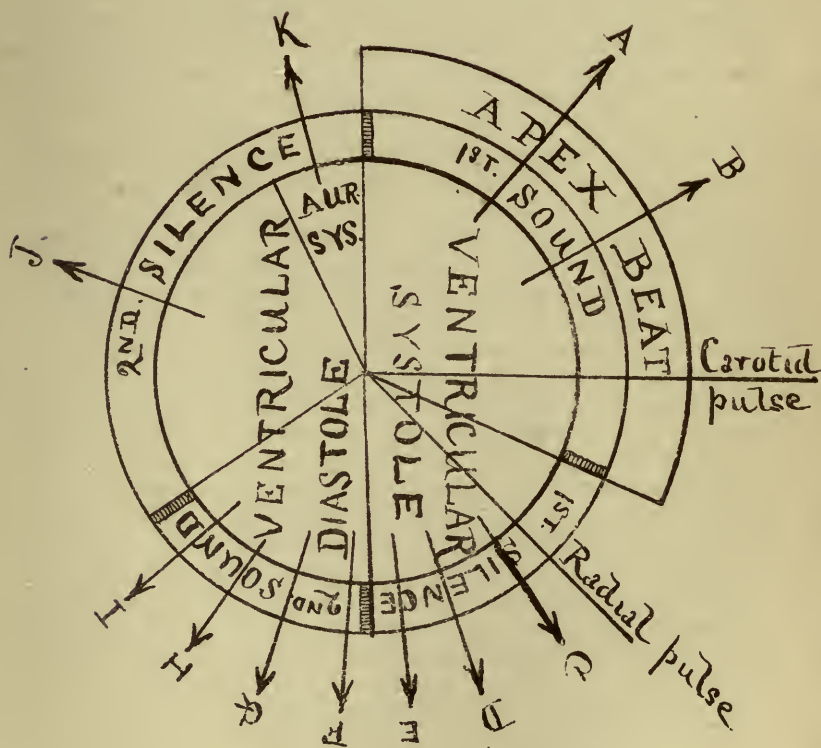


Fig. 4.

moreover, as both the sheep and man are mammalian, and exist in the same medium, the circulation of both must be vigorous for the due maintenance of health. As we have seen, however, the propulsive force intrinsic to the circulation of the sheep is less than that in the circulation of man.

In order, then, to have a circulation equalling in perfection that of the sheep's fellow-mammal man, we must have a greater propulsive force extrinsic to the actual circulation of the former. Hence the preponderance of the muscular development of the left ventricle of the sheep's heart over that of man. But, as I have stated, there are important exceptions to the general horizontality of the circulation of the sheep, and the first of those I mentioned was that portion of the vascular system distributed to the head and neck. Now, to propel blood along the oblique cervical and cranial vessels of the sheep, is manifestly an easier task than effecting the same object in that section of the circulation in man, which is like the rest perpendicular or upright, but where the *vis-à-tergo* is inappreciable in the circulation itself, and where the ventricle has to propel its contents in an upward direction, and against the force of gravitation. This section of the human circulation would, therefore, require a more powerful propulsive organ than the same portion of the circulation of the sheep. The fact, however, is, that the left ventricle of the sheep is more powerful than that of man, and therefore excessive for this purpose. Excessive force, however, in a portion of the circulation which embraces so vital an organ as the brain, would probably be productive of conditions incompatible with health, as is instanced by the cerebral symptoms exhibited by patients in whom the left ventricle is over compensated. If it is true, therefore, that the power of the left ventricle of the sheep is excessive for the purpose under consideration, and if this is so in all cases in animals of this species, Nature would belie her usual ingenuity were she to neglect the due protection of such an important organ as the brain from this excessive force. But we find that she rises to the emergency with her wonted ability, and by spreading that marvellous net at the base of the brain which extorted the wonder of Galen, when he called this portion of the circulatory apparatus in the sheep the *rete mirabile*, we see her recognising at once the surplus force of the left ventricle, and taking efficient means for the protection of the all-important contents of the cranium. Over the rest of the cervical and cranial surface the excessive force may be harmlessly expended, and is probably lost in contributing to the due propulsion of the general circulation. Granted, then, that we have in the propulsive power of the left ventricle a force sufficient to counterbalance the defective impulse in the circulation in horizontal channels, we may consider those portions of the circulation in which this surplus force is not necessary on account of horizontal impediment. That the more or less perpen-

dicular vessels of the limbs are not materially modified in the sheep, may probably be explained in the same manner as I have explained the expenditure of surplus force in the general circulation of the head and neck ; but, when we come to another pendulous and vascular organ of the first importance, viz., the testicles, we can again imagine the injurious influence of a too powerful afferent circulation, and again we see in the long and tortuous spermatic arteries of the ram a safeguard against injury from this cause. To prove the truth of this argument, however, we should find a difference between the nutrient vessels of horizontal and perpendicular organs of equal importance and vascularity, and an examination of the arteries of the kidney in the sheep will convince us on this point. For, whereas the spermatic arteries are, as I have stated, long and tortuous, to diminish by friction over an extensive surface the superfluous impulse from the heart, the renal arteries are proportionally no longer than those of man, and are perfectly straight, showing the necessity for all the impulse possible to drive the circulation aright through the horizontal organ.

So much for the left ventricle. Let us now examine the physical condition of the right ventricle.

The muscular development of the right heart of the sheep is proportionally greater than that of the corresponding chamber in the human heart, and this is probably accounted for by the relative position of the lungs in the two animals. In the sheep these organs may be considered to be superimposed upon the heart, and to lap it round from above downwards, whereas the lungs in man may be said to be mainly behind the heart, and to surround it from behind forwards. The result of such an arrangement is, that blood propelled by the right ventricle into the pulmonary circulation of the sheep must rise, to some extent, in defiance of gravitation, whereas the pulmonary vessels of man are so placed that a considerable portion of the pulmonary circulation lies below the level of the principal branches of the pulmonary artery, and the blood is assisted instead of impeded in its progress by the law of gravity. Hence, I believe, the proportionately stronger right ventricle of the sheep. But, as I shall presently show, the greater the muscular development of the ventricles, the greater the resiliency of these chambers after systole, and the more powerful their suction force towards the ventricle, provided the capacity of the latter be not at the same time diminished. The influence, therefore, exerted by the more powerful right ventricle of the sheep in suction is greater than that exerted by the thinner right ventricle of man, and any advantage which might be obtained by the latter in this respect, in consequence of its greater capacity, is nullified by its having to deal with a larger quantity of blood than the same chamber in the sheep. The lungs, then, are so placed in this animal as to necessitate by their position a powerful ventricle for the due propulsion of blood through the pulmonary circuit, and by

so doing at the same time contribute an absorptive force of greater power than that in man, to assist in conducting a circulation naturally more difficult than in the latter.

What I have stated with regard to the sheep probably applies more or less to the majority of quadrupeds, but, not having personally investigated the matter in other animals, I am unable to state this as a positive fact. We know, however, that the spermatic arteries of the bull are like those of the ram, long and tortuous, and that in many of the lower animals *retia mirabilia* exist. We may, therefore, conclude that in such animals there are also those conditions of the circulation and circulatory apparatus which we have seen require the presence of these bulwarks against excessive impulse in the sheep.

The information derived from this comparison of the vascular system of a biped and a quadruped, appears to me to warrant the conclusion, that the most perfect compensation in cases where the venous circulation is impeded from any cause, whether valvular disease of the right heart or obstruction in the pulmonary circulation arising in the manner already described from such valvular disease, or from an independent chronic lung affection, would be by an accessory development of both the right and left chambers of the heart, the former supplying by suction a *vis-à-fronte* to supplement the great suction force of respiration, and the latter an increased *vis-à-tergo* to urge forward the sluggish column of venous blood, and overcome the resistance of the obstructed arterioles. But, as we have seen, such a perfect arrangement in the lower animals requires a special provision to be made for it in other portions of the circulatory apparatus and organism generally, which, though capable of being produced by a *vis naturæ*, are beyond the power of a *vis medicatrix naturæ*. And, moreover, it must be remembered that the strong walls of a quadruped's heart do not in any way encroach upon the normal capacity of the chambers contained by those walls, whereas in growth compensatory for disease, we find that hypertrophied walls either encroach materially on the capacity of a ventricle when concentric, or, by contemporaneous dilatation, increase that capacity, both of which circumstances when affecting the left ventricle, as will be shown when considering the state of that chamber, are injurious in cases of valvular disease of the right side of the heart. The right ventricle, from its naturally greater capacity in the human subject than the left ventricle, and its thinner walls, is not so liable to concentric hypertrophy as the corresponding chamber in the left; and its increase of capacity, provided the walls were not degenerated, would not materially influence the efficiency of this chamber, which we at present suppose to be already incompetent from valvular disease; but, on the contrary, if at once powerfully hypertrophied and dilated, would rather from its increased capacity have likewise a greater suction power, and therefore assist rather than impede the circulation of the blood.

HYPERTROPHY WITH OR WITHOUT DILATATION OF THE LEFT VENTRICLE.

The analytic table given at page 108 shows us that of twelve cases of valvular disease of the right heart, seven escaped hypertrophy of the left ventricle, whereas in only four was hypertrophy of the right ventricle absent. The table likewise shows us that Dr Tod's case was the only one of the series which exhibited accessory growth of all the chambers of the heart, and that of the other cases which had undergone hypertrophy of the left ventricle, one (Dr Foster's) had an hypertrophied right auricle, without a similar condition of the right ventricle, and in the other (Dr Wilson Fox's) there was an hypertrophied right ventricle, with a normal right auricle, as we may conclude from the condition of the latter not being specially mentioned in an otherwise exhaustive report, while the other cases which exhibited hypertrophy of both the right chambers presented a normal left ventricle and auricle. In other words, we find in these cases of valvular disease of the right heart that the more perfect the compensation in the right chambers from accessory growth of their walls, the less do the left chambers deviate from their normal condition, from which we may conclude that under such circumstances there is least obstruction in the circulation.

The case recorded by Dr Begbie, in which all the chambers were normal, cannot by any means be regarded as having been so seriously incompetent in the action of the defective valves as the other cases recorded, and since the obstruction to the circulation was slight, we are not surprised to find that secondary changes in the circulatory apparatus were inappreciable.

Had the case survived some years these negative conditions would probably have altered. Although we can thus account in a great measure for the absence of hypertrophy in Dr Begbie's case, it is not so easy to explain the absence of such change in the case recorded by Dr Wilks, where there was not only a very serious valvular lesion, but likewise extensive disorganization of the lungs, which must have maimed the efficiency of the great respiratory aid to the circulation.

Can it have been that the absolute obliteration by disease of a considerable portion of the pulmonary capillary circulation caused a more energetic pressure on the unobliterated or, as it were, collateral portion of the same circulation, allowing a quantity of blood to be driven through that portion when the heart would have been incapable of effecting the same purpose through an extensive capillary network? Be this as it may, I am inclined to regard this case as important evidence of the power of the upward pressure of the venous column in an erect animal, which probably assisted very materially in the propulsion of blood through the right chambers. The point, however, which I am most desirous

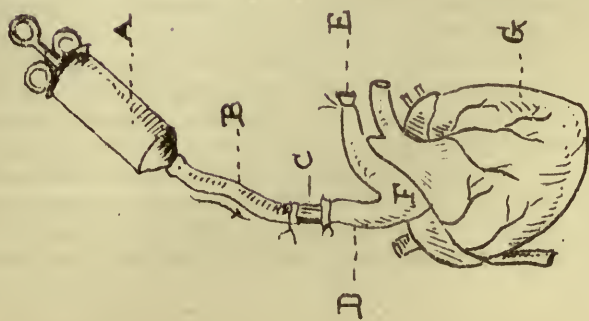
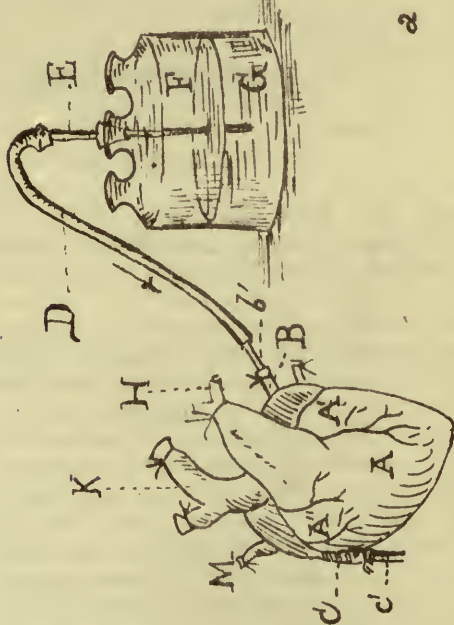
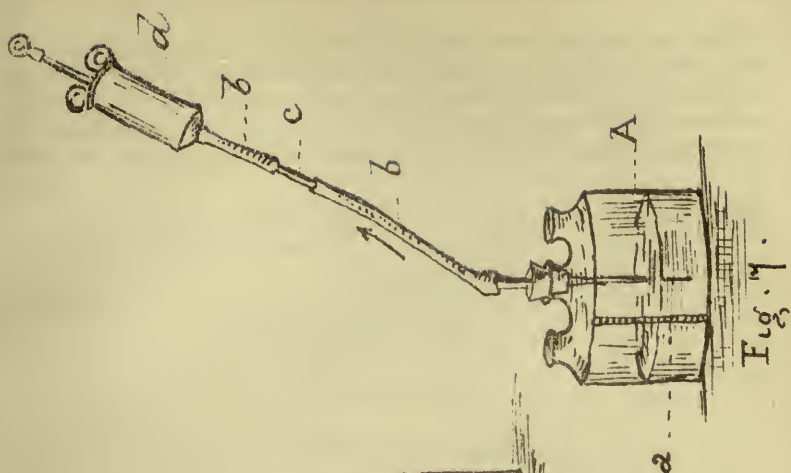
of investigating is the influence upon a circulation rendered difficult by defective valvular action in the right heart, of hypertrophy, with or without concomitant dilatation of the left ventricle. With this object I shall first consider briefly the function of the healthy ventricle in a normal circulation, and shall have occasion to discuss some points not usually treated in text-books, etc.

There is not much difference of opinion as regards the mechanism and function of the left ventricular systole. That the complete filling of the ventricle with blood is the incentive to its contraction, when the walls, closing on their contents, shut the auriculo-ventricular orifice by means of the mitral valves, the closure of which, and opening of the aortic semi-lunar segments, determine the direction of the blood-current, which passes forward into the aorta till the commencement of the latter is distended with the blood recently occupying the ventricle, is admitted by all, as also is the evident object of the ventricular systole to distribute the aerated and unaerated blood through the systemic and pulmonary arteries respectively. But a similar unanimity does not prevail either as regards the mechanism or function of ventricular DIASTOLE. The following views of the mechanism of this event I transcribe from Dr T. Hayden's excellent text-book of *Diseases of the Heart and Aorta* recently published:—"The cause of the initiation of diastole has been by some writers considered to be the impetus of the blood propelled into the ventricle by the auricle during contraction of the latter cavity. In refutation of this doctrine, it is sufficient to observe that active contraction of the auricles takes place only at the end of ventricular diastole, and immediately previous to ventricular systole. Longet maintains that the movement of ventricular diastole is due to the twofold cause of the elasticity of the walls of the ventricle, by which, after contraction, they tend to separate, and thus attain a state of equilibrium, as does a caoutchouc bottle, and the influence of a virtual void in the chest created by the retraction of the lungs in expiration. I (Dr Hayden) believe the ventricles, especially the left, possess normally an intrinsic power of expansion in virtue of their elasticity, but I also hold that this intrinsic power is materially supplemented by the extrinsic force of auricular reaction and contraction operating through the medium of a large mass of blood, the mere weight of which contributes in some degree to the expansion of the ventricles. It should be remembered that ventricular diastole cannot in health coincide with expiration oftener than once in every four pulsations of the heart, and it may not even so often. Dr Garrod maintains the existence of an ACTIVE diastole of the ventricles, dependent upon the active turgescence of the walls of the heart, 'consequent on the flow of blood into the coronary arteries immediately after systole,' the auricles from their thinness not being similarly affected. He endeavoured to prove this by injecting water backwards into the aorta of a sheep's heart. He

further concludes that during ventricular diastole there is in operation an absorptive force or attraction towards the ventricles. Independently of the objection, that under the influence of the same agency the auricles are supposed to contract, and the ventricles to dilate, it must be remembered that in Brackyn's experiments the alternate action of the auricles and ventricles was maintained without a coronary circulation of any kind."

I have failed to discover any detailed account of Brackyn's experiments, but have carefully repeated Garrod's experiment as related in the *Journal of Anatomy and Physiology* for 1869, vol. iii. p. 391, and have likewise performed some modified experiments on the same principle, which I shall presently relate. The probability of the existence of an absorptive force towards the ventricles had suggested itself to my mind before I was aware of the researches of others on this point, from a study of the case which forms the text of this thesis. The very imperfect action of the right ventricle in completing the pulmonary circuit, coupled with a regular pulse at the wrist, and an almost entire absence of anasarca, led me to suppose that the left ventricle exercised an absorptive influence on the pulmonary, as the right did upon the systemic venous circulation, and it was a desire to determine the truth or falsity of this supposition which prompted me to inquire whether my belief in such an absorptive force was shared by others. Accordingly, having become acquainted with Dr Garrod's views, to which I mentally assented without having tested their truth, I proceeded to repeat his experiment, which I did as follows:—

Experiment No. 2 (Figure 5).—A is a syringe capable of holding 2½ ounces of water; B is a piece of india-rubber tubing connecting the syringe A with a piece of lead tubing C, such as is generally used by gasfitters. The latter (C) connects B and the innominate artery D, which is ligatured to maintain the connexion. E is the arch of the aorta (F), likewise ligatured; G is a sheep's heart. The syringe having been filled, water was gradually injected into the artery. With each syringeful the heart was seen to swell out and expand, and water was observed to complete the coronary circuit, being injected, per aortam, into the coronary arteries, and seen to return, mixed with air, by the coronary veins, from which water escaped when they were pricked, and most forcibly at the time of injection of a fresh syringeful. When the engorged walls were compressed so as to obliterate the lumen of the ventricles, they showed considerable resiliency when released from compression, rebounding to their former size and re-establishing the ventricular cavities. The left ventricle, apparently from its greater thickness, exhibited this property in a higher degree than the right. While water thus injected expanded the ventricles, it also, though to a much less extent, seemed to me to expand the auricles. These appeared to rise partly from elongation of the



ventricular portion of the heart, but were also themselves seen to elongate slightly, but only in their more muscular portion (*i.e.*, along the auriculo-ventricular groove), aided possibly by the filling of the coronary sinuses. A transverse section was then made of the heart about its middle, when the following measurements were taken :—

Diameter of lumen of left ventricle,	20 millimetres.
„ „ right „ transversely,	10 „
„ „ „ „ antero-posteriorly,	40 „
Average thickness of right ventricular walls,	11 „
„ „ of septum ventriculorum,	25 „
„ „ of left ventricular walls,	20 „

(*To be continued.*)

Part Second.

REVIEWS.

Parasites: A Treatise on the Entozoa of Man and Animals; including some Account of the Ectozoa. By T. SPENCER COBBOLD, M.D., F.R.S., etc. London: J. and A. Churchill: 1879.

NOT so very many years ago, a treatise on parasites of half the dimensions assumed by Dr Cobbold's present volume would have been deemed an inexplicable event in the history of scientific literature. The subject of helminthology—irreverently shortened into "worms"—may be said to be a decided growth of late years, and the number of investigators who have directed their attention as specialists to the life-history and structure of parasites might be numbered well-nigh on one's ten fingers. Amongst such investigators Dr T. Spencer Cobbold takes one of the highest places, and this statement means something in a department of science in which the names of Van Beneden, Leuckart, Davaine, and Küchenmeister stand forth as shining lights. No man has laboured more diligently and earnestly in a sphere, the importance of which even zoologists, not to speak of physicians, are often slow to recognise, than Dr Cobbold. Of British helminthology it is not too much to say he is the practical founder, and this means much when written regarding a branch of inquiry fraught with its own peculiar difficulties, and presenting its own knotty problems for solution at the hands of the investigator. We have remarked upon the apparent *nonchalance* with which such a study is received by the medical world at large. Perchance Dr Cobbold would go so far with us as to say that downright discouragement was the

better term to apply to the treatment which the study has oftentimes had to fight against when treading the *via medica*. To the many practitioners charged with the treatment of a case of tapeworm, it may seem a subject of trivial importance to be able to say whether the infesting genus is *Tænia* or *Bothriocephalus*; whether the discharged object is a "proglottis" of *Tænia* or a *Distoma* itself; or whether *Tænia mediocanellata* may be readily distinguished from the more common *solium*.

The practitioner's business, urged the utilitarian, was to get rid of the parasite, not to make it a scientific study. But such an argument is obviously open to the grave objection which applies especially to medical utilitarianism, namely, that successful treatment actually depends on an accurate and scientific knowledge of the parasite. Less than this quantum of knowledge may content the practitioner; and an infinitely smaller quantity undoubtedly does duty in a vast majority of cases. But the spirit of true scientific medicine rings out in stern opposition to empiricism, on the plain ground that if the disease is worth treating it is worth treating well. Nor does the contention for a fair knowledge of parasites end thus. The mere discrimination and detection of a grave lesion may rest upon a purely zoological study. Think of "Trichiniasis" and its history,—nowhere better told than in the volume under review,—and let us then admit the importance of recognising parasitic lesions under a symptomatic guise which might be almost anything, from acute rheumatism to low typhoid. Or take *Dracunculus* itself, and note the importance of recognising its presence, and also the source of infestation, now set practically at rest by Fedschenko, as existing in the water-fleas. The medical student who attends his natural history class possesses, of course, an advantage over his neighbour who is ignorant of the entozoa; and the zoological pupil should thus be familiar with the life-histories of parasites at large. In our opinion, professional examinations in zoology might include more frequently than they do questions on entozoa. Such information is surely as important for the medical student as to know the structure of the "basi-occipital of the cod," or the "comparative morphology of the quadrate." As Dr Cobbold puts it, "The medical man who only looks at the phenomena of parasitism as displayed within the human territory (and as we have put it, some are grievously ignorant even of this part of the entozoal kingdom), must of necessity acquire a cramped, narrow, and distorted conception of the rôle played by parasites in the production of disease. Let it be freely granted that to the practising physician, as such, it matters little how many beasts, birds, reptiles, and fishes perish annually from parasitic affections; yet, when it is demonstrable that a large proportion of the strictly human entozoa require a change of hosts; or, in other words, need to pass through the bodies of the lower animals, then it is evident that some acquaintance on his part with the entozoa affecting animals becomes a

practical necessity." And, again, his remarks must be endorsed by all intelligent persons when we find him saying (p. 13) that "the vulgar mind sees nothing attractive in the morphology and organization of a parasitic worm, and commonplace conceptions of the beautiful cannot be expected to embrace within their narrow grasps the marvellous harmony and order that pervade the structure and economy of the individual members of this remarkable class of beings."

To review the work before us, then, becomes an easy task. The reader, zoologist or physician, will find therein all necessary information concerning known parasites and their life-histories. The information is thoroughly up to date, and although, both in figures and in matter, we meet with some old friends in a new dress (including well-deserved and characteristic remarks on the effete teleology of the "unco' guid"), the volume is essentially and really a new history of parasites, written by an authority and specialist, and as such presenting itself as a standard work. Of the illustrations, nothing further need be said save to remark their clearness and applicability; and the bibliography, albeit that it is a little confusing in look from its style of being printed close, is of course a most useful and welcome addition from the student's point of view. In the arrangement of his matter, Dr Cobbold devotes his first "book" to the "Parasites of Man." This section will interest and instruct the purely medical reader. "Book" second deals with the Parasites of Animals treated in a descending scale, even to the *Sphærulearia bombi* of the bees and wasps. Under the head of man's "Insect Parasites," we should, however, have expected from Dr Cobbold a fuller reference to *phthiriasis* and the "lousy diathesis," which appears to have a real existence, and to demand more attention than has been hitherto paid to it. On the grouse disease Dr Cobbold entertains his own views, with which the writer, in these pages, has seen fit to disagree,—by the way there are no references to the papers on the "Grouse Disease" which appeared in the *Journal* some years ago,—and what he has to say respecting parasites of birds in general will be found instructive by sportsmen or even by the henwife, to whose birds the noisome "gapes" threaten wholesale extinction. We may not close this notice without bestowing a word of praise on the section dealing with the curious *Bilharzia*. On the subject of endemic helminthiasis, the history of this latter parasite has bearings of the highest importance. We end as we began, by heartily recommending Dr Cobbold's last production as a valuable contribution to the history of Entozoa.

A. W.

Surgical Anatomy and Surgery. Essays by JOHN A. WYETH, M.D. 1st and 2d Prizes of the American Medical Association. New York, 1879.

THESE essays are a monument of careful and laborious work, and must ever be a valuable book of reference on the operations with which they deal. In Dr Wyeth's tables are recorded, apparently, every published case of operation on the principal bloodvessels of the neck—more than one thousand cases being given, with a short history of each. Besides this, Dr Wyeth has tabulated the results of 173 dissections of these vessels (innominate, subclavians, and carotids), giving measurements of the exact length of each, and the points at which the various branches are given off. It is impossible for us to give an idea of the enormous number of data and the amount of work represented in the book before us. But Dr Wyeth's deductions are well worth consideration, being the outcome of so much careful labour.

As to the carotids, Dr Wyeth shows that ligature of the common carotid is a much more fatal operation than ligature of the external, the mortality of the former being 41, and of the latter $4\frac{1}{2}$ per cent. The result of his dissections leads Dr Wyeth to add to this argument in favour of the ligature of the external carotid the fact, that there is usually plenty of room for a ligature between the superior thyroid and lingual, or between the occipital and auricular branches.

Our author adds the weight of his authority to the opinion that ligature of the innominate is an unjustifiable operation.

With regard to the subclavian, Dr Wyeth recommends ligature for aneurism only when other means fail, as the mortality is 40 per cent. We recommend this book as a most valuable addition to the library of the practical surgeon, there is so much information brought together in Dr Wyeth's tables. Besides the elaborate essays referred to, there are others on the surgical anatomy of the tibio-tarsal region, the obturator artery, and the hip-joint.



Clinical Lectures on Diseases of Bone. By C. MACNAMARA, Surgeon to the Westminster Hospital, London.

THIS little book is truly clinical, being mostly a record of cases, and, as such, useful and instructive. Unfortunately, the arrangement is loose and rambling, and consequently not very readable. The lectures seem to have been taken down pretty much as they were delivered. What there is in them, though good, is rather fragmentary.

A Treatise on Hydrophobia. By J. P. M'NEILL, M.D. (T.C.D.), etc.
- London: Henry Renshaw: 1879.

THIS is a little *brochure* of 111 pages devoted to a *résumé* of hydrophobia, its pathology, causation, diagnosis, distribution, and treatment. Dr M'Neill has nothing new to tell us concerning the pathology or etiology of the lesion in question. But his remarks are judicious, and well worth perusal by those who may care to possess in a handy and short summary a knowledge of this disease. With his remarks (p. 24) upon the advisability of local treatment, even long after a bite, we thoroughly agree. "Spontaneous hydrophobia" is noticed in detail, but surely the author might have found some suggestive material in the writings of Dr Lauder Lindsay of Perth? Dr M'Neill speaks encouragingly of advances towards a successful treatment as our knowledge has progressed. His sections on treatment deal with an immense variety of remedies, which seem to invalidate the remark with which he begins his notes on treatment regarding the hopelessness of placing our trust in the Pharmacopœia. In his passage from transfusion to the mercurial vapour bath, and from excision to curara and the inhalation of oxygen, Dr M'Neill deals with a wide range of proposed remedies. His section on "preventive measures" (p. 104) is, on the whole, good; but he might have added to section ii. of his "measures" a note advising humanity to the dog whilst enforcing "existing dog laws." Any one who knows anything about dogs will be ready to second the assertion that our canine friends are often shamefully treated by these same "preventive measures," and many an unfortunate animal, from the homeless pariah to the valued friend of the household, is rendered "hysterical," and may develop pseudo-hydrophobia by the torturing muzzle and other apparatus fixed upon his jaws. Section iv. advises that every person meeting a stray dog without collar and address of owner "should consider it a duty to society to obliterate it himself without reference to the police;" whilst section v. advises leniency in the law, should the "obliterator" have exceeded the limits thereof. *Verb. sap.*, only we think Dr M'Neill is just a little bit too hard on our "Rabs."

A. W.

Catalogue of the Bombay Drugs, including a List of the Medicinal Plants of Bombay used in the Fresh State. Compiled by SAKHARAM ARJUN, L.M., Assistant Surgeon, formerly Teacher of Marathi Vernacular in Grant Medical College. Bombay: Printed at the *Examiner Press* Fort: 1879.

THIS work is compiled with very great care, and forms a volume of about 250 pages, at once interesting and instructive.

It is much more than its name implies—a mere “catalogue” of drugs. It is really a work on the *Materia Medica* of Bombay bazaars. We have not only a complete list of the native drugs found in the bazaars of Bombay, but a description of the parts employed and their medicinal uses. The *Marathi*, or native name, is also given of each substance.

The work is divided into four parts:—I. Vegetable substances, arranged according to the natural system, beginning with the *Ranuncu'aceæ* and ending with the *Algæ*; II. Mineral substances; III. Animal substances; and IV. Bombay plants used as medicines in the fresh state, not sold either by the druggists or the native herbalists; to which there is added an excellent index. Such is a general plan of Dr Arjun's work. Under vegetable substances the reader will recognise many substances officinal in the B. P.—as aconite, anise, calumba root, poppy, bael fruit, linseed, rue, mastiche, myrrh, senna, cloves, cajuput, colocynth, elaterium, ammoniacum, galbanum, assafoetida, hemlock, valerian, catechu, benzoin, manna, nux vomica, gentian root, chiretta, scammony, hyoscyamus, tobacco, spearmint, peppermint, rhubarb, camphor, cinnamon, croton, castor oil, kamala, cannabis indica, cubebs, galls, juniper berries, sarsaparilla, cardamoms, ginger, aloes, and several others. A marked feature in this Catalogue is, that in many cases plants of the same natural order are substituted for those of the B. P. for the same uses to which those officinal in this country are used. We find, for example, that aconite is obtained from at least three species besides the one officinal in the B. P. This is also well illustrated in the *Solanaceæ*. It is curious to find many of our native plants—plants by no means uncommon in Scotland—used by the natives of Bombay medicinally, although never used in this country—as *Fumaria parviflora* used in ague, *Lepidium sativum* used as an aperient, *Viola odorata* used as a diaphoretic and emetic, *Malva sylvestris* used as a demulcent, *Apium graveolens* used as a stimulant, *Daucus Carota* (wild carrot) used as a diuretic and abortive, *Hedera Helix* (the common ivy) used as a bitter aperient, *Achillea millefolium* (common yarrow) used as an aromatic tonic and astringent, *Artemisia vulgaris* used as a perfume and in rheumatism, *Lactuca sativa* used as a refrigerent in fevers, *Origanum vulgare* used as a stimulant and emmenagogue, *Prunella vulgaris* used also as a stimulant and emmenagogue, *Taxus baccata* used instead of digitalis, *Cynodon Dactylon* used to check vomiting in bilious complaints. The last plant is a native of England, but not of Scotland.

Many of the mineral substances are also officinal in the B. P. Of the plants used in the fresh state we find the *Ricinus communis* (castor-oil plant) so used. “The fresh leaves heated and applied to the breasts, and kept on from twelve to twenty-four hours, will not fail to bring on the flow of milk after childbirth. The same applied to the abdomen will promote the menstrual discharge.”

The work will be of great service to all practitioners in India, and will be read with interest and profit by all who devote special attention to the study of *Materia Medica*.

The National Dispensatory; containing the Natural History, Chemistry, Pharmacy, Actions and Uses of Medicines, including those recognised in the Pharmacopœias of the United States and Great Britain. By ALFRED STILLÉ, M.D., LL.D., Professor of the Theory and Practice of Medicine and of Clinical Medicine in the University of Pennsylvania; and JOHN M. MAISCH, Ph.D., Professor of *Materia Medica* and Botany in the Philadelphian College of Pharmacy. London: J. & A. Churchill: 1879.

THIS is a great work by two of the ablest writers on *Materia Medica* in America. Professor Stillé is well known as one of the most eminent authorities on therapeutics, and Professor Maisch has proved himself one of the most distinguished pharmaceutical chemists of the present day. The authors have produced a work which, for accuracy and comprehensiveness, is unsurpassed by any work on the subject. There is no book in the English language which contains so much valuable information on the various articles of the *Materia Medica*. The various substances are arranged alphabetically, which is the best plan in a work of reference, which this undoubtedly is. The *general characters* are succinctly and accurately given; their *constituents* are also correctly stated, and the *medical actions and uses* are stated briefly, but, on the whole, correctly and quite up to the latest discoveries in medicine. The work has cost the authors years of laborious study, but they have succeeded in producing a dispensatory which is not only *national*, but will be a lasting memorial of the learning and ability of the authors who produced it.

Chemical Notes and Equations, for the Use of Students. By R. MILNE MURRAY, M.A., M.B., C.M., Edin. Maclachlan & Stewart, Edinburgh: 1879.

IN about 106 pages Dr Milne Murray has managed to condense a great deal of chemical knowledge. The preliminary outline of principles is exceedingly good and, so far as we have noted, accurate. Each of the Elements is then considered, and a synopsis of its properties, method of preparation, etc., given.

The student reading for his First Professional will find these Chemical Notes of great use for systematizing his knowledge.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LVIII.—MEETING X.

Wednesday, 2d July 1879.—Professor SANDERS, *President, in the Chair.*

EXHIBITION OF PATIENT.

I. *Dr James Carmichael* exhibited a man, 67 years of age, with well-marked ELEPHANTIASIS OF THE LEG, which had existed for forty years. There was no history of lymphatic or erysipelatous inflammation, and, as would be seen, there was no ulceration. He thought of trying in this case the effect of continuous gentle pressure by the rubber bandage.

II. *Dr Kirk Duncanson* showed the LEFT TEMPORAL BONE of a patient who had been attending the Ear Dispensary. The man, aged 37, had been a wood-carver. Until recently he enjoyed good health, when pain with swelling came on in his left ear, which lasted until a discharge of matter took place some three days after attack. On examination the patient could hear none of the usual tests with left ear. The tuning-fork was heard some days acutely in left ear when placed on front teeth of lower jaw. There was swelling and redness over mastoid. The external auditory meatus was filled with a purulent secretion, which after syringing was found to come from an opening in posterior wall of the meatus, about $\frac{1}{4}$ inch in front of membrana tympani. By pressing on swelling over mastoid the purulent matter escaped with pain more freely from opening. The patient had a haggard, anxious expression. Although swelling disappeared, as his general health did not improve, it was intended to cut down and into the mastoid process. The patient did not again turn up at the Dispensary. At next visit we were informed by Dr David Menzies of his death. On post-mortem pus was found in the arachnoid space all over the brain; dura mater healthy; but the upper anterior surface of petrous portions of temporal bone was carious, as you now see.

III. *Mr Chiene* then read a paper on COUNTER-IRRITATION, in which he tried to show that a counter-irritant acts through a vaso-motor mechanism, and that the effect is due to a change in the amount of blood in the vaso-motor organ.

IV. *Dr Hunter* then read a paper on A CASE OF DOUBLE FLOATING KIDNEY, which appeared at page 202 of this Journal.

The President considered Dr Hunter's paper a valuable addition to our knowledge. Dissections of floating kidneys were so rare that the Pathological Society of London doubted the existence of

the lesion. Cases reported during life were not rare, but were not verified by post-mortem. He himself had seen some well-marked ones giving rise to no important symptoms. In one case diagnosed by an eminent physician the "floating kidney" was found on post-mortem to be really cancer of the omentum, so that care must be taken in the diagnosis, which, however, in the cases he had himself seen, was sufficiently obvious.

Professor Grainger Stewart thought Dr Hunter's case interesting and valuable, owing to the careful history during life and the verification of the diagnosis by post-mortem examination. It settled a disputed point, as the existence of floating kidneys was pooh-poohed by some of their friends both in London and Edinburgh. He had long been satisfied of the existence of such cases, and the possibility of diagnosing them. In one case under his charge renal symptoms—viz., mucus and blood in urine—developed during the displacement, which always took place in one direction. The displacement was annoying to the patient, recurred about once a week, and prevented regular attendance at his work. By means of a truss, constructed so as to prevent motion of the kidney in the spécial direction, he was relieved from his discomfort, and the displacement did not occur. He felt personally indebted to Dr Hunter for his paper. He was interested when he heard of the case privately, and glad that it was now on record.

Dr Wilson had seen one case where Sir James Simpson was consulted, and diagnosed floating kidney. Another eminent physician had considered the case one of a malignant nature, but, fortunately, the lady was still alive.

Prof. Simpson felt that Dr Hunter needed no apology in bringing this case before them, as he was really putting the Society under an indebtedness to him for this and other valuable communications to it. Rayer was the first to point out the condition of floating kidney as one causing distress. He himself had never seen a dissection of any case; but in many of them he had as little doubt as to there being really a floating kidney as if he had actually seen it on post-mortem examination. The conditions as to position, form, and mobility were generally the same as in Dr Hunter's case. The symptoms varied somewhat, and the uneasiness was not so much that of physical pain as of a consciousness of distress to the patient. Some of Rayer's cases were in medical men, one of whom was anxious to give up his practice when he learned the nature of his malady. He had seen several cases where evidently the whole train of symptoms arose from the displacement of the kidney—a result not to be wondered at after hearing Mr Chiene's paper as to influences passing from one nervous centre to another, and so on. Sometimes, indeed, the lesion was overlooked; and he knew at least one case where a homœopathist confined a lady to bed for a threatened miscarriage, the real mischief being due to a displaceable kidney. The lesion, as a rule, was easily re-

cognised, although sometimes there was difficulty if the kidney was as low as the ilio-sacral joint. The Society and profession were much indebted to Dr Hunter for his record of the case, as it had been carefully observed during life and verified by post-mortem examination. An additional value was given to it by Dr Hunter pointing out the conditions under which it occurs. He himself had met with it both in married and unmarried women, and more frequently on the right side. Perhaps this might be due to the pregnant uterus growing up towards the right side. Orth had also pointed out the influence of the absorption of fat in causing it. One point that struck him in Dr Hunter's case was the existence of the spinal curve. This, by causing the kidneys to lie more or less vertically, might favour their descent. He thought that those who made post-mortems on such cases should note as to this point. He had spoken at some length because the subject was an interesting one. They had among them to-night the well-known gynecologist, Dr Marion Sims, who, he felt sure, had not been fifty years in practice without meeting such cases. They would all be glad to hear a word or two from him.

Dr Marion Sims had always felt interested in the subject of floating kidney. He remembered how much his first case puzzled him. He called Dr Alonzo Clark in consultation, who gave it as his opinion that there was no immediate danger, and that the patient would die of something else. He had never been able to do any good to his cases, and felt particularly grateful to Dr Grainger Stewart for his suggestion as to the use of a truss. When visiting recently in Berlin, he saw a case under the care of Martin, where the displacement of the kidney prevented the patient working, and where Martin proposed to excise it. He himself was startled at the idea of this, but Martin had already done it four times successfully. He accordingly performed it by abdominal incision and under Listerism. The kidney was forced up by pressure in the lumbar region, and then ligatures were passed round the vessels, etc., at the hilus, just as in cysts of the broad ligament. Unfortunately, the patient died in forty-eight hours. There were cases, however, where it was justifiable. He had listened to Dr Hunter's paper with great pleasure.

Dr Logie had seen three cases of floating kidney. One of them was observed twenty years ago, where the late Dr Duncan confirmed the diagnosis. The patient was still living, and the floating kidney had disappeared. Of the three cases two were on the right side, but he did not at present remember the position of the third.

Mr Annandale was professionally indebted to Dr Hunter for his paper, as it was an account of an authentic case, and from there being no renal symptoms in this case they could encourage patients similarly affected that their symptoms were due to the mental disturbance. Dr Sims had referred to excision of the kidney. One point should be kept in mind in this, viz., that the remaining kidney might be diseased. Dr Campbell of Dundee had excised

the kidney once successfully. He himself had thrice cut down on the kidney, once for stone. On two of the occasions he found no lesion. He wished Dr Sims to know that Scotch surgeons had not neglected kidney surgery.

Dr Hunter thanked the Society for the flattering reception accorded to his paper. His patient had no urinary symptoms. No formidable operation was necessary, as the use of a bandage relieved any uneasiness experienced. Any trouble he had experienced in the preparation of the paper was amply compensated for by Dr Sims' speech.

V. *Dr Grainger Stewart* showed A CASE OF POTT'S CURVATURE treated by apparatus. A year ago the patient had been carried into his ward with the curvature in the neck, marked motor symptoms, and pain in chest. These had gradually disappeared after the apparatus had been used, and the patient was now able to work and run about.

VI *Dr Cadell* then read, for Dr Wortabet of Beyrout, A CASE OF BILHARZIA HÆMATOBIA.

The President had seen a case, and found the ova of the parasite in the urine.

Part Fourth.

PERISCOPE.

MONTHLY RETROSPECT OF OBSTETRICS AND GYNÆCOLOGY.

BY ANGUS MACDONALD, M.D.

CEREBRAL EMBOLI IN NEW-BORN CHILDREN.—At page 271, Bd. iv., *Zeitschrift für Geburtshülfe*, is a short paper drawing attention to the passage of cerebral matter into the circulation as a cause of death of the child in severe labours, whether instrumental or otherwise. The author gives an account of a severe instrumental case, in which particles of cerebral tissue were freely met with in several organs throughout the body. He also refers briefly to a similar case, where the labour was slow, but the instrumental assistance slight, and concludes with the following observation:—"From the above observations it results that after squashing of the brain, even when only small areas are involved, portions of brain tissue may be squeezed into the bloodvessels that are at the same time torn asunder, and that these masses lying in the vessels may be carried after the delivery throughout the circulation as emboli into the individual organs. The danger to life from such emboli is only too plain."

THE RESULTS OF CHRONIC CATARRH OF THE CERVIX AND THEIR TREATMENT is the title of a paper by Dr M. Hofmeir, which is to be found at page 330 of the above journal. It contains a record of

some extremely interesting cases, and gives the treatment employed. The author maintains the *frequent* occurrence of relative stenosis of the external os uteri in cases of cervical catarrh. In consequence of this he holds there is produced accumulation of mucus and sacculation and distension of the upper part of the cervical cavity, with dysmenorrhœa and sterility as results. In a large number of cases of cervical hypertrophy, Hofmeir asserts that he has observed this state of matters. Its existence can only be demonstrated by laying the vaginal portion of the cervix freely open by lateral incisions. This he recommends to be made after carefully washing the vagina with solution of carbolic acid. So soon as the cervix is freely opened, a large lump of tough mucus is found to occupy and distend the sacculated cavity. The cavity will usually admit with ease the index finger, and the mucous membrane lining it may be either flattened out or thrown into the normal arbor vitæ folds. Hofmeir is not very specific as to the condition of the inner os, but one gathers from his statements that he found it also dilated. The treatment of such cases recommended by Hofmeir is free incision, with antiseptic precautions, down to the junction of the vaginal portion of the cervix on each side—removal of the diseased mucous membrane at the edge of the outer os—formation of a new outer os, by sewing the mucous membrane of the cervical cavity to the mucous membrane of the vaginal surface of cervix—and, finally, bringing the edges of the lateral incisions together by means of sutures, as in Emmet's operation. The success of this treatment Hofmeir declares to be most complete. (It is certainly sufficiently heroic.—A. M.)

A CASE OF URETRO-UTERINE FISTULA, CURED BY EXTIRPATION OF A KIDNEY, is recorded by Zweifel of Erlangen in the *Archiv für Gynäkologie*, Bd. xv. s. 1. The patient, a sufferer from contracted pelvis, had been five times delivered, each time with difficulty. On the fifth occasion delivery was effected, as in most of the others, by forceps. This was complicated with laceration of the cervix, and led to the establishment of a uretro-uterine fistula. There was constant dribbling of urine through the os, with, at the same time, normal filling and evacuation of the bladder. The diagnosis was established beyond reasonable doubt by catheterization of the ureter, through the bladder. It was found quite easy to catheterize the right ureter after dilatation of the urethra by Simon's specula. The left ureter could not be catheterized, although the experiment was repeatedly made. On each occasion the right ureter could be catheterized without difficulty. After injecting coloured fluid into the bladder, only a drop could, after a time, be seen at the outer os. Various means to obtain relief having been tried and found ineffectual, there remained only two feasible proposals—viz., either to obliterate the vagina after the formation of an artificial vesico-vaginal fistula, or to remove the entire left kidney. The patient and her friends objected to the first method, and preferred to risk the second. This Zweifel

performed by the extra-peritoneal method. His incision externally extended from the eleventh rib to close upon the crest of the ilium. The deep incision then was continued along the outer edge of the erector spinal mass, and outside the quadratus lumborum. The latter muscle was, accordingly, not cut into. There was some difficulty in enucleating the kidney from its situation through want of room for the hand, but this was ultimately effected with the help of a Nelaton's forceps. The ureter and renal vessels were tied separately by passing an aneurism needle, armed with a carbolized silk ligature, between the ureter and the vein. Care was taken not to cut the kidney substance too close to the ligatures, so as to avoid any tendency in them to slip. The wound was sewed up, all except the lower edge, through which the ligatures were taken. Antiseptic precautions of the strictest character were observed throughout the operation and in the after treatment. The case went to a successful termination, notwithstanding that an abscess formed in the track of one of the deep sutures, into which a small drainage-tube was passed, which became incarcerated in the wound. The patient recovered without any symptom of injury. There was no cardiac hypertrophy, nor indication of urinary disturbance from the operation. The right kidney appeared quite sufficient for the wants of the economy. The author refers to the histories of other seven cases of this operation—2 by Simon, 1 successful and 1 fatal; 1 by Burns, fatal; 1 by Peters, New York, fatal; 1 by Durham, fatal; 1 by Jessop, *Lancet*, 16th June 1877, result not stated; and 1 by Langenbeck, successful. He proposes, after Heineke, to introduce the term nephrectomy for complete removal of the kidney, and nephrotomy when the kidney is merely cut down upon for the removal of calculus or other cause.

INVESTIGATIONS INTO THE INFLUENCES OF THE POSITION OF THE BODY ON THE POSITION OF THE NON-GRAVID, AND ESPECIALLY OF THE PUERPERAL UTERUS, is the title of a paper by Küstner, of great value, immediately following the one above referred to in the *Archiv für Gynäkologie*. The investigations, elaborately and painstakingly made upon fifty-eight lying-in patients, were undertaken with the view of contributing some fixed standpoint on which to steady the loose views entertained by gynæcologists upon this subject. The author begins with a series of selections from the current literature in Germany, in America, and in this country upon the subject, and shows that the views entertained by most authors are very loose, and even self-contradictory. He then proceeds to explain his plan of making his observations, which is essentially the method of Shultze, referred to already in this *Journal*, vol. xxiv., page 182, and which consists in adapting carefully a flexible sound to the shape of the uterus, noting accurately its position when the woman is at rest lying on her back; then causing her to sit up, and observing and measuring the deviation of the sound thereby produced. Not a single accident followed the observations.

He formulates his results in the following propositions:—1. The change in position of the body has demonstrably, as its result, change in the position of the normally situated, normally fixed uterus. 2. The alteration depends essentially upon the fact that in the upright position of the body the fundus sinks towards the feet, whilst, on the contrary, the cervix ascends towards the head. 3. In lying-in women there is usually demonstrated, also, a decided backwards movement of the entire organ in the erect position. 4. The changes in position under head 2 do certainly occur in all women. They are most manifest in the case of such as have given birth, and again among the latter class they are most evident in such as have given birth repeatedly within a short period. They are less manifest in women lying-in with their first children; are seldom demonstrable in "virgins." 5. The extent of the movements under discussion are generally far less than those conditioned by the changes in the condition as to fulness of the neighbouring organs, more particularly as regards the bladder. 6. The phases of intra-abdominal pressure conditioned by the different positions of the body do not produce the movements of the uterus in question. 7. It is very probable that the specific gravity of the organ is the chief factor in producing the movements. 8. The backwards displacement on standing is occasioned by the bowels sinking in front of the organ. 9. The abnormally fixed and abnormally loosened uterus is influenced in its position by the same forces in different ways. 10. Since the position of the uterus in the standing person, in comparison with its position in the recumbent position of the body, represents only a still more pronounced anteflexio-version, together with a more pronounced retro-position, and never at all events can be regarded as a pathological position, nor as a transition towards any such position, accordingly, in the change of position of the uterus in question, there cannot be found any contra-indication to our allowing the lying-in woman to assume the erect position the moment after the termination of labour. 11. Likewise the abdominal pressure does not bring the enlarged uterus any closer to a pathological position than the position on the back. Unless, therefore, there is otherwise connected with the upright position a more frequent abrogation of the abdominal pressure, the upright position can occasion no injury to the woman, so far as regards the position of the uterus. 12. Finally, since neither obstruction to the circulation nor disturbance of involution have anything to do ætiologically with the upright position of the lying-in woman, from this point of view there would be no objection to the lying-in woman standing up immediately after the termination of labour. Dr Küstner does not advocate allowing a lying-in woman to get up at once, however. On the contrary, he argues that point against Goodell, and maintains that the experience forages of the benefits derived from maintaining the recumbent position for a considerable period after delivery cannot belightly set aside. He indeed regards prolonged recumbency as essential to a good recovery. He maintains, however, that its amount

depends upon the traumatism connected with the delivery, and that it should rise and fall according to that factor, and should not be regulated by fanciful hypotheses regarding its imaginary effects in favouring displacements of the uterus.

A CONTRIBUTION TO THE HISTOLOGY OF EROSIONS OF THE VAGINAL PORTION OF THE UTERUS, by Dr William Fischel, of Prague, is the next paper in the above-mentioned journal. It is a lucid and powerful article devoted to the criticism and elucidation of the opinions held on this vexed subject. The author's opinions are supported by a series of careful microscopic observations. He does not agree with Veit and Rugé in their recently published opinion that there do not occur in the cervix any true erosions. He, on the contrary, maintains that such are to be found independently of glandular transformation, and that he has repeatedly demonstrated such, and gives a figure of one. But he holds that the representations of structure given by these observers are true, and explains the divergence of opinion between himself and them by assuming that these observers did not happen to hit upon any simple erosion in the course of their investigations. They however, he believes, described perfectly correctly what they found. Fischel proceeds to maintain that the so-called cervical erosions are of a very complex character. They may appear as simple erosions of the vaginal portion when the surface is really bared of true epithelium. But besides this, there are to be seen at least three other varieties of cervical erosion, which he proposes to call respectively adenomatous erosion, papillar erosion, and adeno-papillar erosion. In the first class the leading change consists in enlargement and multiplication of the glandular elements of the cervical mucous membrane. In the second, the leading change is increase of growth in the connective tissue between the glands. This connective tissue is found to develop in a truly papillary manner. The third variety presents a combination of glandular and connective tissue hypertrophy. The multiplication of glands may be real or apparent—apparent when one enlarged gland is separated into several more or less united portions, by the ingrowth of connective tissue upon its wall. Dr Fischel is of opinion that these forms all originate in changes of an inflammatory character affecting the mucous membrane of the canal of the cervix. This leads to ectropion of the outer os, and very frequently, as a secondary result, also to change in the mucous membrane of the epithelium lining the vaginal aspect of the cervix. This surface becomes then gradually transformed into tissue similar to the erosion. The changes, therefore, are not simple ectropion, but inflammatory hypertrophy leading to ectropion and glandular multiplications. He thinks Veit and Rugé are wrong in believing that these so-called erosions result from alterations produced by the peculiar development of a single layer of cylindrical epithelium only. He shows further that the most projecting portions of the papillar erosions are covered, not with cylindrical,

but with rounded epithelium. He asks, also, if these erosions were of the nature suggested by Veit and Rugé, why there is never a clear space of tissue between the os and them, why we do not find independent parts here and there of the surface of the cervix covered with a single layer of the cylindrical epithelium, and why there should be constantly such a morbid increase of the connective tissue of the eroded surface, if the primary action were in the single line of cells, as they would have it? The therapeutical conclusions at which Dr Fischel arrives are, that for ordinary purposes measures adapted to remove inflammatory action are calculated to be successful in curing these cervical erosions; but that when there is much hypertrophy of tissue and multiplication of glandular elements, the aid of the knife or an escharotic in the removal of the redundant tissue may be required. He declines to pass an opinion in regard to the connexion between these erosions and epithelioma of the cervix, saying that we need more anatomical and clinical evidence before we are in a position to pass judgment.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Edinburgh School of Medicine, etc., etc.

BROMHYDRATE OF MORPHINE.—This drug is being used as a substitute for the sulphate. It is more soluble in water, and is twice as powerful. It combines the sedative effects of the bromine with the anodyne properties of the morphine. It is not so dangerous, and it is not so apt to be followed by unpleasant symptoms. It is the drug especially for irritative affections of the spinal cord. This is claimed by Dr Laudrieux, in the *Journal de Thérapeutique*.—*New York Medical Record*, 4th October 1879.

THE ACTIVE PRINCIPLES OF SQUILL.—E. Merck (*Apoth. Zeitung*, No. 26, 1879) has made some observations on the constituents of the squill, and has separated three principles, which have received the names of scillipierin, scillitoxin, and scillin. Professor Husemann of Göttingen has examined their physiological effects; and Dr C. Moeller has written an inaugural dissertation on the subject. Scillipierin is a white amorphous powder, very soluble in water, and hence well suited for hypodermic injection. It acts powerfully on the heart, retarding its action, and in toxic doses (1 to 2 centigrammes in the frog) arresting it in diastole. Scillitoxin is an amorphous cinnamon-brown powder, insoluble in water and ether, soluble in alcohol. Its alcoholic solution leaves a long-continued, bitter, burning taste in the mouth; and the dry powder is very irritating to the nasal mucous membranes. It is easily but not absolutely soluble in aqueous alkaline solutions. When introduced under the skin of frogs in substance or mixed with sugar of milk, it is readily dissolved and absorbed. It has a far more intense toxic action on the heart than scillipierin, one-eighth of a milligramme being sufficient to cause death in the

frog. It arrests the heart's action in systole. Scillin is a clear yellow, crystalline, tasteless powder, sparingly soluble in water, soluble in alcohol and in boiling ether, from which it is again precipitated in the crystalline form on cooling. Its action on the heart is much less than that of the other substances, but it appears to produce *malaise*, vomiting, etc. Which of the two substances—scillipicrin or scillitoxin—is the more valuable diuretic must be ascertained by clinical observation. The remarkable antagonism of their action on the heart indicates that the use of extract of squill, or of scillitin, or of squill in substance, is not the best method of administering the remedy, and that a satisfactory result is only to be expected from the separate use of one of the constituents; scillin which produces troublesome after-effects, being eliminated.—*British Medical Journal*, 27th September 1879.

THERAPEUTIC USES OF IODOFORM.—E. Kurz (*Memorabilien*, 15th August) says that he has used iodoform ointment with good result in cases of orchitis, strumous swellings, lymphadenitis, lymphangitis, periphlebitis, and exfoliations in the pelvis. In a recent case of indurated chancre, an ointment of one part of iodoform to ten of glycerine ointment produced a cure in a few days; secondary symptoms, however, appeared afterwards. In another case, a large soft chancre, with bacony base and ragged edges, on the inner part of the prepuce was cleansed in a few days by the application of a similar ointment once daily, and the sore was completely healed in a fortnight. A patient with spinal myelitis had for several years suffered from prurigo of the arms and thighs, with moist eczema of the legs. Inunctions of the iodoform ointment produced marked improvement of the prurigo in the course of a week; but the eczema became worse. This was relieved, but not quite cured, by the use of boracic acid ointment. A scrofulous boy, with enlarged cervical glands, was treated by iodoform locally and cod liver oil internally. After some weeks no trace of the glands could be felt. In a communication to the *Allgemeine Medicinische Central-Zeitung* of 13th September, Dr Lindemann states that he has found that the balsam of Peru is capable of completely masking the disagreeable odour of iodoform. The addition of two parts of the balsam to one of iodoform is sufficient, but a greater quantity of the former may be used. The best vehicles for ointment are lard, glycerine ointment, and especially vaseline; and for liniment, glycerine, spirit, and collodion. Dr Lindemann gives the following formulæ: *℞. Iodoformii, partem i.; balsami Peruviani, partes ij.; vaselini, seu adipis suillæ, seu unguenti glycerini, partes viij. Fiat unguentum. ℞. Iodoformii, partem i.; balsami Peruviani, partes iij.; spiritus vini rectificati, seu glycerini, seu collodii, partes xij. Misce.* In making these preparations, the iodoform and balsam should be first rubbed together, and the other ingredients then added. Dr Lindemann

calls attention to the fact that the application of balsam of Peru has been recommended by Dr Caspari and others in various cutaneous diseases and ulcerative processes.—*British Medical Journal*, 27th September 1879.

BROMINE VAPOUR IN THE TREATMENT OF CROUP.—Dr Netolitzky has employed the treatment of croup recommended by Dr Schutz three years ago in nine cases, with seven recoveries. He used the following formula:—℞. Bromi puri, potass. bromidi, āā grs. vijss.-xv.; aquæ, ʒv.-vij. M. This solution was poured on a small sponge or on cotton, and the patients inhaled the vapour given off by it for five or ten minutes every half hour. The potash is added to retard the too rapid volatilization of the bromine, which necessitates also a frequent moistening of the sponge or cotton. When there was a tendency to renewal of the exudation, the inhalations were continued for a prolonged period, but weaker solutions were used. Ipecac. and other expectorants were given at the same time. One great advantage of these inhalations is the facility with which they can be administered, no special apparatus being required. They do not excite any affection of the respiratory organs, are not specially liable to excite cough, are easily borne, and can be employed at any age. Bromism was not produced in any of the cases. Dr Netolitzky does not regard the bromine inhalations as a specific for croup; but the results obtained by himself and others have been so favourable, that he feels justified in recommending the method of treatment warmly to the profession (*Allg. Med. Cent.-Zeit.*, 16th August 1879).—*New York Medical Record*, 4th October 1879.

THERAPEUTIC USES OF BORACIC ACID.—E. Kurz of Florence writes (*Memorabilien*, 14th August) that he has used an ointment of five parts of boracic acid and ten or fifteen of vaseline with much success in several cases of eczema of the face and limbs. One case of eczema squamosum, which had lasted five months, was cured in three weeks. In the case of a child whose whole head was affected with impetigo, the application of boracic acid after the removal of the scales produced a remarkably speedy cure. Two cases of prurigo, which had for a year resisted all other treatment, were cured in one and two months respectively by the application of the boracic acid ointment twice a day. The same treatment was successful in a case of non-syphilitic psoriasis of three years' standing, in which carbolic acid and arsenic had failed. In a case of exfoliative lupus of the nose, the use of boracic acid for a month had no effect; salicylic acid produced slight improvement. In two cases of severe gonorrhœa, injections of a solution of boracic acid (1 in 100 of water) almost completely arrested the discharge; a scanty secretion of mucus, which continued for a time, was cured by the use of subnitrate of bismuth.—*The British Medical Journal*, 27th September 1879.

POWDERED ALOES AS A DRESSING FOR WOUNDS.—Secing the

advantage which is derived in veterinary practice from the dressing of wounds by powdered aloes, Dr Millet states, in the *Gazette Hebdomadaire*, that he has employed it in a case of lacerated phalanges, and reports very favourably as to the benefits derived from it. He considers that it fulfils a double indication, acting as a cicatrisant and as a means of dressing by occlusion, for the powder becomes agglutinated under the influence even of the heat of the hand, and lines the wound with an impermeable layer which prevents the contact of air, assuaging the severe pain of the wound almost immediately. The dressing has also the advantage of being very simple and only requiring renewal at long intervals. —*Medical and Surgical Reporter*, 6th September 1879.

CALOMEL *v.* HYDRARGYRUM CUM CRETA. — As a means by which the system may be gradually saturated with mercury, small doses of mercury and chalk powder are doubtless very effectual; but as a cholagogue to induce secretion from the duodenum and liver, I believe a far more certain medicine is found in calomel. One grain of calomel triturated for some time with twelve grains of sugar of milk forms a very effective cholagogue powder, when administered in a dose of one or two grains. The well-known blue pill, also, may be depended upon for cholagogue action, especially if the pill mass be of some age, so that a small quantity of the suboxide of mercury has been developed in it. Metallic mercury "killed" by minute trituration with sugar of milk forms a gray powder that can be easily prepared in the same way as the hydrargyrum cum creta, and, so far as my experience goes, is a preferable medicine. Hydrargyrum cum magnesia I have also tried in one case, but have nothing special to report of its action. I have a decided preference to calomel and blue pill as the best forms for obtaining the cholagogue action of mercury. The practice of frequently administering small doses of hydrargyrum cum creta with a view to correcting secretions is objectionable, as its tendency is gradually to impregnate the system with the mercury, and so produce irritability and anæmia.—John C. Thorowgood, M.D., F.R.C.P., *Medical Press and Circular*, 8th October 1879.

SALICYLIC ACID IN RHEUMATISM.—Twenty cases of this treatment are reported from the Massachusetts General Hospital in the *Boston Medical and Surgical Journal*, with the following comments:—In reviewing these cases the following facts are observed: In eight cases out of seventeen which were treated with salicylic acid, the duration of the disease from the beginning of the attack, without reference to length of treatment, was in the longest case twenty-six days, and in the shortest five days, the improvement being very marked from the beginning of the treatment. In four of these cases there were one or two slight exacerbations of pain, relieved in from two to six days by small doses of the acid. Of the three patients who took the salicylate of soda only, even includ-

ing the length of illness before entrance, the duration of the disease was less than twelve days in each case, the shortest time being two days. In the remaining nine cases the duration of the disease was either six weeks and more, or was so marked by some complication that satisfactory results could not be obtained. In two of these cases there was very marked improvement after taking the acid; in one the treatment was discontinued on the second day owing to wild delirium; in another pleurisy supervened, masking the symptoms; and in five the treatment met with varying success, the symptoms constantly recurring and showing little improvement from the use of the acid. The length of illness before entrance in these cases varied from five days to three months. Out of seventeen patients who used salicylic acid, in five nausea and vomiting were produced; in eight, deafness and noises in the head; and in five, delirium, one being wild for thirty-six hours. Of the three who took salicylate of soda only, there was no gastric nor cerebral disturbance. In regard to the comparative merits of the treatment by salicylic acid and the salicylate of soda, a fair estimate cannot be made from these cases. In the three who were treated by the salicylate of soda, the recovery was very rapid; but in no one of them was the attack of a very severe nature. Judging from the foregoing cases, we are justified in coming to the following conclusion: that although salicylic acid is not a specific remedy for every case of rheumatism, yet in acute cases, if the treatment be begun within a few hours, or at most a few days, from the onset of the disease, and pushed vigorously, the most satisfactory results may be obtained. Care should be taken, moreover, not to omit the treatment immediately after the cessation of pain, but gradually to diminish the dose.—*Medical and Surgical Reporter*, 6th September 1879.

PERISCOPE OF OTOTOLOGY AND OPHTHALMOLOGY.

By Dr KIRK DUNCANSON, Surgeon to the Ear Dispensary, 6 Cambridge Street; Assistant-Surgeon, Eye Infirmary; Lecturer on Diseases of the Ear, Edinburgh School of Medicine.

THE VALUE OF ATROPIA IN THE TREATMENT OF ACUTE INFLAMMATION OF THE MIDDLE EAR.—Dr Theobald, whose attention was first drawn to the use of atropia in inflammatory affections of the ear by a brief abstract treating of that subject from some foreign journal in the *American Journal of Medical Sciences* several years since, now records his experience of the use of that drug. He finds it very useful in allaying the pain dependent upon furuncular and diffuse inflammation of the external auditory canal, and possibly in favourably influencing the inflammation itself. It is, however, in the treatment, cutting short, of acute otitis media that it has proved the most efficacious, and especially in the acute inflammation of the middle ear resulting from colds, to which young children are peculiarly subject, and which is the usual cause of the familiar

earache of childhood, as well as in the more severe forms of otitis media which follow the exanthematous fevers. He employs the medicine in the form of a solution of the strength of 4 grains of the sulphate to one ounce of distilled water, 8 to 10 drops of which, warmed, are dropped into the ear, and allowed to remain simply by the position of the head from ten to fifteen minutes, and repeated, according to the severity of the symptoms, maybe every three or four hours. No dilatation of the pupil has been observed by the frequent instillation of the 4-gr. solution where the membrana tympani were entire. In the case of a little girl of three or four years of age, where perforation of both membrana tympani existed, dilatation of the pupils took place; there seems, however, to have been a doubt about the drug having been conveyed to the eyes by the hands of the restless patient. The atropia sulphate may be added to astringent lotions in cases of otorrhœa. [We think Dr Theobald will find the troublesome papular eruption of the external meatus and concha arising from the "stopping the ear with a bit of cotton," rather than from the free instillation of a 4-gr. solution of sulphate of atropia.] Dr Theobald relates the case of his own little boy, six years of age, convalescing from scarlet fever, who was seized with severe pain in the left ear in the middle of the night. Upon examination the upper and anterior portion of the tympanal membrane was found to be deeply congested, and the whole membrane dull and lustreless. Besides making him use a gargle of tincture of iodine and iodide of potassium, his father warmed and dropped into his ear 10 drops of a 4-gr. solution of atropia sulphate, which was repeated during the two following days, and on the next day the disease had almost entirely disappeared, with complete restoration of the hearing power in the left ear. "But for the atropia, a perforation of the drum-head with otorrhœa would in all probability have been the ultimate result. In how many instances might not a termination equally favourable be obtained if only the opportunity for prompt treatment were afforded!"—*The American Journal of Otology*, No. 3, vol. i. p. 201.

ON A VISUAL PHENOMENON AND ITS EXPLANATION. — The phenomenon in question may be seen under the following circumstances:—Face the breeze, and without winking allow a small rain-drop to fall on the surface of the cornea, all the while keeping your gaze fixed on a lamp-light some hundred feet away. As the raindrop alights on the cornea several rings of light appear to surround the luminous source, and *they gradually contract in diameter*. Explanation—In sunshine the moving ring-crest of water produced by dropping a pebble into a still and shallow pool projects a ring of light on the bottom, which gradually increases in size. The moving ring-crest, by its refractive action, produces a hollow cylinder of rays of ever-increasing diameter, and we see a section of it on the bottom of the pool. The raindrop falling on the cornea spreads out on its surface in several ring-crests, and would

similarly produce a series of outward-travelling rings of light were it not for the combined action of the refractive media of the eye. Under the influence of these two hollow cones of light are formed within the vitreous humour directly upon impact of the raindrop. The first of these has for its base a small circular area of the hind surface of the lens, and its prolongation; the second cone has the retina for its base. As any individual ring-crest spreads out on the cornea, the first cone increases in size, the common apex advances towards the retina, and consequently the section of the second cone projected on to the retina decreases in size, and appears as a contracting ring of light. (Abstract of a paper by Wm. Ackroyd, F.I.C., read before the members of the British Association, 1879, in Section D, Biology, Department of Anatomy and Physiology.)—*Nature*, 11th September 1879, p. 471.

COLOUR-BLINDNESS AMONG SEAMEN.—In January 1877 the Board of Trade issued instructions to examiners for masters' and mates' certificates, directing that the candidates should be subjected to a test examination as to their ability to distinguish colours. A return issued yesterday shows that the number of candidates who failed to pass the test between May 1877 and May 1879 was 39. Of that number, however, 12 passed upon re-examination, and one was allowed to have passed without any further examination. In four cases the candidates were unable to distinguish colours, and in one case no particulars were given. Green was in twenty-five cases described as red, in five as yellow, in six as blue, and in five as other colours. Red was in twelve instances described as green, three times as blue, and once as another colour. Yellow was mistaken for green eight times, and for red eleven times. Blue was confounded once with green, once with red, and once with yellow. Black was twice taken for green, and twice for red; and white was twice described as green.—*Scotsman*, 11th September 1879.

THE TREATMENT OF ANEURISMS BY ELECTROLYSIS.

(Continued from p. 384.)

CASE 5.¹ *Large Aneurism of Transverse Portion of Aortic Arch; Death.*—At the May meeting of the Glasgow Pathological and Clinical Society, Professor Gairdner related the history of this case. The patient, a woman, æt. 42, was admitted to the Western Infirmary on 11th December 1878. A prolonged course of rest, with full doses of iodide of potassium, having failed to arrest the course of the disease, it was decided to try galvano-puncture. Dr McCall Anderson performed the operation on three occasions. After the first (on 20th January) there was some sickness, and pain in the tumour, but there seemed to be a certain increase in

¹ Reported in *British Medical Journal*, 19th July 1879, page 93. Proceedings of Glasgow Pathological and Clinical Society.

solidity in the mass. The second application (18th February) was without effect. The third (on 12th March) appeared to be the most successful; but a small abscess formed at the seat of the puncture, which afterwards oozed blood. The tumour enlarged and became diffused, and the patient died quietly six weeks after the last puncture was made. At the post-mortem examination the aneurism was found to involve the transverse portion of the arch, and to have perforated the chest wall at the second and third ribs by a large opening admitting three or four fingers. A large external sac was thus formed. The aneurism generally was filled with soft red laminated clot, but at the aperture in the chest wall corresponding to the position of the point of the needle there was a firm white laminated clot as large as a hen's egg.

CASE 6.¹ *Large Aneurism of the Ascending Portion of the Aortic Arch; Death.*—The patient, a male, æt. 40, was admitted to the Newcastle-on-Tyne Infirmary, under the care of Dr Drummond, on April 1878. He had suffered for five months previously from shortness of breath and pain in the chest. There was slight pulsation and prominence to the right of the sternum, in the second interspace. An aneurism of the ascending portion of the arch was diagnosed. He was treated for three months with full doses of iodide of potassium, and rest as far as possible, but the sac slowly increased. He then left the infirmary, but returned in eight weeks, the sac being larger. The same treatment was again adopted for six months, but the sac still increased in size, the whole of the right chest anteriorly being now dull on percussion. On 15th January two steel needles, silk insulated, were inserted into the most prominent part of the sac to a depth of one inch; the poles of a Tibbets battery were connected—one with either needle; a current, at first from 5, afterwards from 20 cells was passed for forty-five minutes. The operation was not attended with pain. There was no bleeding. On the 7th day after the operation there seemed to be some improvement, but the pulsation was soon as active as ever. A second operation was performed on 12th February, gutta-percha insulated needles being used. The same strength of current as in the first operation was used. The sitting lasted one hour. The pulsation became less at the seat of punctures, but the sac extended upwards. On 18th March a third puncture, under the same conditions as before, was performed. Soon afterwards the tumour rapidly increased in size, and the patient died in four weeks. At the post-mortem the sac was found to be of great size. It sprang from the ascending portion of the arch by an opening two inches in diameter. The sac contained a considerable quantity of loose clot; a thick layer of firm clot was adherent to the front wall, especially in the neighbourhood of the punctures. Two small pit-like depressions marked the position of the punctures. At the site of the negative

¹ *Lancet*, 9th August 1879, p. 193.

pole the external part of the sac was thickened and tense, like cicatricial tissue.

CASE 7.¹ Male, æt. 44. Was seen by Dr Wicks, of Newcastle-on-Tyne, in October 1878. An aneurism of the thoracic aorta was diagnosed. The case was treated with iodide of potassium with marked benefit. In January the patient, having omitted the treatment for six weeks, again came under observation, and the same treatment was again adopted. There was again temporary improvement. In February hæmoptysis set in, and there was a good deal of pain. Dr Drummond then saw the case in consultation, and advised the continuance of the iodide. The tumour continued to increase, and galvano-puncture was performed. A current from fifteen Leclanché elements was passed through two needles for an hour. The operation was attended with severe pain. The next day the sac was inflamed, and had increased considerably in size. The patient died suddenly four days after the operation, from hæmoptysis. The post-mortem showed a general dilatation of the ascending and transverse portions of the aortic arch. The top of the sternum and first rib were eroded; through this opening the dilated aorta projected. There was no saccular aneurism, as was expected. The cavity of the aneurism was half filled with a large clot. The aneurism had opened into the anterior wall of the trachea.

*The Differential Diagnosis of Aneurism and Intra-Thoracic Tumour.*²—In the *Dublin Medical Journal* for May 1879, Dr Grimshaw relates a case illustrative of this difficulty. The most interesting point in it is the fact that the right internal jugular vein was occluded by a large coagulum, forming a solid tumour at the root of the neck. This tumour was surrounded with some enlarged glands, and was thought to be cancerous. The diagnosis was decided in great part by the presence of this tumour, the chest signs and symptoms being such as might be caused either by aneurism or solid tumour.

*Case of Abdominal Cancer simulating Aneurism.*³—In the same number of the *Dublin Medical Journal*, Dr Archer relates a case of cancer of the abdomen which closely simulated aneurism of the abdominal aorta. The patient, a sailor, æt. 50, was admitted to the Mill Road Hospital, Liverpool, on 5th June 1877, complaining of pain in the epigastrium, aggravated after taking food. He occasionally vomited matter which "was like barm," but which never contained blood. On physical examination "a distinct, diffuse, distensile, and heaving impulse could be felt in the epigastrium. This extended in every direction for about four inches, and a corresponding area of dulness could be indistinctly (owing to the intervention of coils of intestine) mapped out by percussion. A blowing murmur was heard over the seat of the impulse. Impulse persisted on placing the patient on his hands and knees, but

¹ *Lancet*, 9th August 1879, p. 193.

² *Dublin Medical Journal*, May 1879, page 382.

³ *Ibid.*, page 385.

was neither increased nor lessened." Iodide of potassium failed to relieve the pain, and the patient died on 24th October, having become greatly emaciated and cachectic. At the post-mortem examination the tumour was found to be a large mass of encephaloid, lying in front of the spine and almost encircling the aorta. Another large mass almost surrounded the duodenum. Numerous secondary deposits were found in the liver, mesentery, etc.

Note.—The failure of the iodide to relieve the pain in any doubtful case of aneurism is a diagnostic point of considerable value.—*B. B.*

The Diagnosis of Abdominal Aneurism by the Sphygmograph.—In the May number of the *Journal des Sciences Médicales*, M. Baltus records a case of abdominal aneurism, and directs attention to the sphygmograph in the diagnosis of this affection. He found the femoral tracing profoundly modified, showing a want of fullness, a flat or atheromatous top, but, what he thinks of more importance in a diagnostic point of view, a well-marked notch either at the summit of the line of ascent or a little before the summit of the line of ascent. The notch resembled the hooked apex of aortic regurgitation, but was not present in the radial tracings.

Note.—As M. Baltus says in his paper, the value of this observation is as yet doubtful, for it remains to be seen whether this form of tracing is present in other cases. The usual effect of the passage of the blood current through an aneurismal sac is to obliterate the waves, as Mahomet and others have shown.—*B. B.*

PERISCOPE OF OPHTHALMOLOGY.

OPTIC NEURITIS IN CEREBRAL DISEASE.—In the August number of the *Annales d'oculistique* Dr Parinand, from the results of post-mortem examination in twenty cases of meningitis and four of cerebral tumour, in all of which a careful ophthalmoscopic examination of the fundus had been made before death, comes to the conclusion that the various intra-cranial affections only produce œdematous optic neuritis (choked disc) when they are complicated with hydrocephalic effusion. A large cerebral tumour may fail to give rise to any ophthalmoscopic changes in the papilla if unaccompanied by hydrocephalus, while on the other hand the smallest pathological change accompanied by effusion of any considerable extent into the ventricles involves the optic nerve. The increase in intra-cranial pressure produced by hydrocephalic effusion alone is therefore, according to Parinand, the cause of what is generally termed optic neuritis. He believes that the existence of true optic neuritis, or a state of actual inflammation of the optic nerve, must be admitted after the researches of Leber and Iwanow, but this condition produces visible alterations in the nerve much more slowly than the neuritis usually significant of cerebral disease, which is in reality an œdema.

DR STEPHEN MACKENZIE (*Brain*, Part vi. p. 257) reports on a case of double optic neuritis without gross cerebral lesion. The case itself does not present any marked peculiarities, and the substance of the author's remarks as to the immediate causation of optic neuritis may be gathered from the following quotations:—"I think that, in spite of the eminence and ability of its advocates, from v. Græfe downwards, the pressure theory of swelling of the optic nerves, whether called choked disc or neuritis, cannot be maintained. We see large encephalic tumours, sometimes of rapid growth, without any neuritis, and we see small tumours in distant parts of the cranial cavity, as in the cerebellum, with power to provoke the neuritis. Neither is there any ante or post-mortem evidence, other than that of the optic nerves themselves, to bear out the theory of a *Stauungspapilla*. The inflammation of the optic nerve which we see with the mirror during life, and with the microscope after death, appears to me to be excited in all cases by either an extension process from the membranes of the brain to the optic sheath and thence to the nerve and retina, from the brain to the optic tract and nerves directly, or by an independent affection of brain and optic nerve by a common cause acting by selection on histologically allied structures" (p. 267); and again, "Cases of cerebral tumours without neuritis are probably cases in which the cerebritis has not reached the optic nerves" (270). In Dr Mackenzie's case the brain was found to be atrophied, and a microscopical examination of the right optic nerve made by Dr Sutton revealed a considerable amount of cell infiltration, greatest below the lamina cribrosa.

ON THE RESULTS OF KERATO-PLASTIC EXPERIMENTS.—In the August number of *Klinische Monatsblätter für Augenheilkunde*, Dr Dürr gives the result of thirteen kerato-plastic operations performed by him during the last three years. These are interesting, as showing that attempts at corneal transplantation are probably not altogether futile. Twelve times the *modus operandi* was by removing a peripheral portion of the upper layers of the cornea, leaving Descemet's membrane, with some of the lower layers, *in situ*, and filling up the gap thus formed with a portion of the cornea of a rabbit held in position by sutures through the attached portion of conjunctiva. In one case Hippel's operation with the corneal trepan was tried. In only two of the thirteen cases was the result worthy of mention. Complete transparency of the graft did not persist in any case, although it was attained in the beginning in half of the cases. One of the two more successful cases, in which considerable improvement of vision resulted after operation, was a scholar in the blind asylum in Hanover, and had to be led in the street. The right eye was atrophic. On the left there had previously been performed discision, and afterwards iridectomy, but the last operation had been followed by a dense corneal opacity. He recognised large objects, movement of the hand at 18". The trans-

plantation was made above after a removal of corneal tissue 6mm. sq. The layers of cornea left in position were almost completely transparent, and the attachment of the graft took place without interruption. After four weeks the transplanted portion of cornea was transparent in the centre, although opaque to the distance of 1 mm. round the edges. The patient was able to make out No. 12 Jæger, and was from this time onwards employed as a guide for the other scholars of the institution. Unfortunately, in the course of the second year after the operation the graft became almost completely opaque. The portion of cornea, however, surrounding it cleared up considerably, and there was on this account a permanent improvement of vision. The second case, which he also gives in full, was more successful, inasmuch as the transplanted portion of cornea still remains transparent, two years after operation. The difficulty of getting a complete amalgamation of the two layers of cornea with persisting transparency he ascribes to deficient nourishment of the grafted layer, and for this reason makes the graft peripheral, and takes along with it a portion of conjunctiva, which, however, may itself destroy the transparency from a too great development of vessels. He claims for his method the advantage of obtaining a much larger surface of contact between the graft and the existing corneal substance than by the methods of trephining where the raw surface is confined to the edges, which are for the most part composed of pathologically altered tissue. Favourable cases for attempting Dürr's method are, of course, only those where the lower layers of cornea have retained their transparency.

IODIDE OF POTASSIUM AND CALOMEL IN OPHTHALMOLOGY.—Schlæfke (*Græfe's Archiv*, vol. xxi. 2, p. 251) refers to the fact which has frequently been observed, that the external application of calomel may give rise to severe inflammation of the conjunctiva if used simultaneously with the exhibition of KI internally. This he explains by the formation of iodate and iodide of mercury, which in the presence of common salt, or KI, are soluble, and act as caustics. He finds that if KI be taken twice daily in 0·5 grain doses, its presence can be constantly detected in the conjunctival sac.

THE EYE SYMPTOMS IN LOCOMOTOR ATAXIA.—In the July Number of *Brain*, Dr Grainger Stewart publishes an interesting clinical lecture on the above subject, comparing the eye symptoms observed by him in twenty cases of ataxia with the statistics of Eulenburg. Dr S. groups the symptoms under four heads:—1, double vision, squinting and ptosis; 2, changes in the pupil; 3, amblyopia and amaurosis; 4, colour-blindness. Out of the twenty cases eight had symptoms of the first class, four of which, he says, had diplopia "without manifest squint." Under heading 2 he has seen no case of mydriasis, which Eulenburg considers a late manifestation in ataxia. He suggests, however, the possibility

of its being one of the earliest and overlooked symptoms. Seven of his cases had marked myosis. Absence of contraction of pupil on stimulus of light coinciding with normal accommodative movements, as first described by Argyll Robertson, was observed in all the cases of myosis, also in one case in which the pupil was not contracted. Fourteen of his twenty cases come under heading 3; in only five of which, however, there was distinct atrophy of the optic nerve (?) Finally, of the twenty cases only three could be referred to heading 4. From the method of examination adopted, only the cases in which the achromatopsia had reached the centre are here referred to.

TRANSFUSION OF HUMAN BLOOD. By Dr J. ROUSSEL, Geneva. Translated by C. H. C. GUINNESS, B.A.—As this little book is prefaced by a letter from Sir James Paget, in which Dr Roussel's operation and apparatus are recommended, it is unnecessary for us to do much more than give our readers a short description of these. Dr Roussel recommends human blood alone to be used, and that it should be injected directly from person to person. He characterizes the employment of defibrinated blood or blood from the lower animals as "mere makeshifts, accepted only by those whose attempts to practise the transfusion of vital human blood have ended in disaster." Arterial transfusion is discarded as too dangerous. The direct "venoso-venous transfusion" is recommended. Dr Roussel's apparatus is made of caoutchouc, and polished on the inside, because this is least injurious to the blood passing through it. The principal part of the instrument is a tube dilated in the centre, so that, with suitable valves, it may act as a pump. The one end of the tube has a canula for insertion into the vein of the recipient. The other end has a lancet with which the vein of the giver is opened, and which is enclosed in a cylinder for protection of the opening from the air. Besides this simple enough apparatus, Dr Roussel has an arrangement by which a stream of water is passed through the tube and over the arm of the giver. The object of this is to cleanse the apparatus, and protect the blood and wound from contact with the air. All this, we think, could be more efficiently and simply done by performing the operation under the protection of Lister's spray, and with ordinary antiseptic precautions. In his enthusiasm for his favourite operation Dr Roussel demands that all classes of people should be educated in its advantages, and that it should be universally employed in the treatment of a great variety of circumstances. He reports fifty cases operated on—twenty-six wholly successful, fourteen partially, and ten unsuccessful. He states that in no case did any harm result from the operation. Sir James Paget recommends the method as the best known to him, and an operation which "may safely be performed by any one competent to practise surgery."

Part Fifth.

MEDICAL NEWS.

DR H. H. KANE, of New York City, who has for some time past been collecting statistics on the hypodermic injection of morphia, will consider it a favour if members of the profession having had experience in the use of this instrument will answer the following questions:—1. What is your usual dose? 2. Do you use it alone, or with atropia? 3. What is the largest amount you have ever given at one time? 4. Have you had any inflammation or abscess at the point of puncture? 5. Have you had any deaths or accidents thus produced? 6. Do you know of any cases of the opium habit from the use of this instrument? In case of death, please give the results of the autopsy, if any was held. Any reference to journal or other literature on this subject will be thankfully received. All communications will be considered strictly confidential, the author's name not being used unless permission to that effect is freely given. Address all communications to Dr H. H. Kane, 366 Bleecker Street, New York.

STATISTICAL SOCIETY—"HOWARD MEDAL."—The following is the title of the Essay to which the Medal will be awarded in November 1880. The essays to be sent in on or before 30th June 1880:—"The Oriental Plague, in its Social, Economical, Political, and International Relations: special reference being made to the labours of Howard on the subject." The Council have decided to grant the sum of £20 to the writer who may gain the "Howard Medal" in November 1880. Further particulars or explanations may be obtained from the Assistant-Secretary, at the Office of the Society, King's College Entrance, Strand, London, W.C.

OBITUARY.

CHARLES EDWARD SMITH, Æt. 41.

THOSE of our readers who knew "Charley Smith of the 'Diana'" will read with sincere regret the announcement of his early death. The history of that terrible winter in the Arctic Seas—never published *in extenso*, and but partially revealed in fragments—caused a deep throb of emotion throughout the profession. Deserted by the other whaling-vessels, the unfortunate "Diana" of Hull was left amidst closing ice in September 1865—without provisions, without winter clothing, without fuel. On Christmas day the captain—

Captain John Gravill—died of cold and exhaustion. Their spare spars, their boats, save one, were burnt to melt the ice for drink. In a little time half an oil cask per diem was the allowance of fuel; a biscuit and a half per diem their scanty ration, in the Arctic Seas in a winter of unwonted severity. As the only educated man among them, the management of the ship and crew, after the captain's death, devolved upon its doctor. An Essex quaker, the surgeon manifested all the passive courage of his sect. He took his turn at the pumps, which were going day and night, the ship having received a severe nip in the ice. By his example he animated and cheered the crew to work at what seemed a hopeless task. Then scurvy broke out; and many of the enfeebled wretches, on their miserable dietary, died on slight effort. With their swollen, bleeding gums they mumbled their biscuit, and ran "their race with death," as Captain Allen Young has designated this memorable voyage. When the death-stricken vessel drifted into Ronas Voe, in the Shetland Isles, in April 1866, only four men could stand. Of the crew of fifty-one men, the captain lay in an icebound grave, while nine corpses lay stretched on the deck, and four more of them died before the ship reached Lerwick. When the "Diana" entered the port of Hull, thousands of people assembled to greet the ill-fated vessel. Charley Smith was recognised as the master-spirit to whom were due the lives of the survivors—the safety of the ship. Modest, courteous, diffident, unwilling to speak of his own deeds, Smith found himself a recognised hero. His reception was more than enthusiastic. The profession *fêted* him in public. The Board of Trade presented him with a case of surgical instruments which cost £50, accompanied by a testimonial signed by the President, declaring that his services had been "generous, humane, and unwearied." The townspeople of Hull and the underwriters of Lloyds presented him with a testimonial, and a purse containing one hundred and eight guineas. Many months of illness and exhaustion followed this long and terrible strain; and it was some time before Smith could resume his studies. When he returned to Edinburgh, one and all, teachers and fellow-students, welcomed back the genial, pleasant youth whose experiences had been so dreadful, and who had borne himself so heroically. Nothing, however, could overcome his repugnance to any perusal of his diary with a view to publication. Scraps and fragments of his story occasionally fell from him, telling of what straits he had passed through, of what a tremendous tension he had endured. Not feeling equal to study, he resided with Dr Moffat of Dalston, near Carlisle, working as his assistant. A general favourite, full of genial humour, no mean poet, the pleasantest of companions, "Diana Smith" was known far and wide. During this time Sir Roderick Murchison induced him to join Mr Lamont in a Polar expedition; and few who knew Smith will forget his descriptions of scenes in Spitzbergen. A keen naturalist, from his very child-

hood he was familiar with every beast and bird. When only twelve years of age he noted that the martins never builded their nests in the afternoon, but left their work to dry while they were engaged in search of food. After a year or two of comparative rest he resumed his medical studies in Glasgow, where "Diana Smith" won a reputation for earnest application. He made an excellent appearance for his diploma, and became house physician to the infirmary, where his discharge of his duties was most exemplary. His clinical reports are described as "models of correct English and careful observation." After trying a practice in Durham, he gave it up, and went as surgeon in charge of the emigrant ship "Dunedin" to New Zealand, where he settled in practice at Otepopo. Here he soon gathered friends around him, and was beloved by the Maoris; he was made a magistrate, so great was the respect for him. He married, and had a very extensive practice, when his health broke down. The final act, which completed what over-exertion had been only too successfully essaying, was diving in the harbour for the body of a drowned man, which after repeated efforts he succeeded in recovering. A life of self-sacrifice culminated in this effort, and a severe ulcer of the stomach followed the exposure. He disposed of his practice, and came home with his wife and child, in the hope that this would restore his health—in reality to die. Worn, wan, wasted, waxen—he met death calmly and composedly, as he had faced it many a time and oft before. The old man, the playful humour passed away, and religious convictions took their place. Quietly, in his Essex home, the wanderer went to his rest in peace. After all his perils in various parts of the globe, "Diana Smith" died in bed under his father's roof-tree in September last, leaving the sorrow-stricken old man to furnish what comfort he could to the girlish widow and her fatherless boy. To this boy he has left the manuscript diary of that fearful winter in the Arctic Seas. Many will regret that he has thus prevented the publication of the record of his sufferings and his heroism until they will be well-nigh forgotten; for one and all of his hundreds of friends would have been glad to possess, in the form of a book, a memorial of a man who did honour alike to his profession and to humanity.

J. M. F.

PUBLICATIONS RECEIVED.

- WILLIAM ADAMS, F.R.C.S.,—Observations on Contractions of the Fingers. J. & A. Churchill, London, 1879.
- DR ALBERT EULENBERG, —Real-Encyclopädie der Gesammten Heilkunde, Lief I., Band I. Urban & Schwarzenberg, Wien, 1880.
- SAMUEL FENWICK, M.D.,—Outlines of Medical Treatment. J. & A. Churchill, London, 1879.
- W. DOUGLAS HEMMING, F.R.C.S. Ed.,—Otorrhœa. Baillière, Tindall, & Co., London, 1879.
- E. KLEIN, M.D., F.R.S., and E. NOBLE SMITH, L.R.C.P., M.R.C.S.,—Atlas of Histology. Part VIII. Smith, Elder, & Co., London, 1879.
- J. L. MILTON,—The Hygiene of the Skin. Chatto and Windus, London, 1879.
- ROBERT MITCHELL, M.R.C.S.,—General and Historical Treatise on Cancer Life. J. & A. Churchill, London, 1879.
- REV. JOHN MOFFAT,—The French Exhibition of Horrors. Hunter, Rose, & Co., Toronto, 1879.

Sir JAMES PAGET, Bart.,—Clinical Lectures and Essays. Longmans, Green, & Co., London, 1879.

St George's Hospital Reports. Vol. IX. J. & A. Churchill, London, 1879.

WILLIAM THOMSON, F.R.C.S.,—On Phthisis and the Supposed Influence of Climate. Stillwell & Co., Melbourne, 1879.

L. DE WECKER,—Ocular Therapeutics. Smith, Elder, & Co., London, 1879.

PERIODICALS RECEIVED.

American Journal of the Medical Sciences,—April-July.

American Journal of Obstetrics,—April-July.

American Journal of Otolaryngology,—April-July.

American Practitioner,—Nov.-July.

Analyst,—March-Oct.

Annales d'Oculistique,—Jan.-Aug.

Archives of Dermatology,—April-July.

Archives Générales de Médecine,—March-Oct.

Archives of Medicine,—April-Oct.

Archives de Tocologie,—March-Oct.

Berliner Klin. Wochenschrift,—Feb. 24-Oct. 20.

Birmingham Medical Review,—April-July.

Births, Deaths, and Marriages, Monthly Return of,—Feb.-Sept. Quarterly Return,—March. June Supplement to do. for 1878.

Boston Medical and Surgical Journal,—Feb. 13-Oct. 2.

Brain,—Parts 5, 6.

British Medical Journal,—March 1-Oct. 18.

Bulletin Général de Thérapeutique,—Feb. 28-Oct. 15.

Centralblatt für Chirurgie,—Feb. 22-Oct. 18.

Chicago Journal,—March-Sept.

Church of England Temperance Chronicle,—June 14.

Cincinnati Lancet and Clinic,—March 22-April 19.

Crónica Médica,—Aug.-Sept.

Dublin Journal of Medical Science,—March-September.

France Médicale,—Feb. 22-Oct. 18.

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Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*On the Medical Uses of Electricity: A Clinical Lecture by* GEORGE W. BALFOUR, M.D., F.R.S.E., Consulting Physician to the Royal Hospital for Sick Children.¹

SOMEWHAT more than two thousand years ago, Thales, the great Ionian philosopher, discovered that a piece of amber rubbed with a dry woollen cloth attracted to itself any light objects in its neighbourhood. He concluded that amber had a soul, an *anima* or vital principle, which was nourished by what it was able to attract to itself.

This soul or *anima* we know as little about as Thales did, and we call it ELECTRICITY, in memory of the amber—*electron*—from which that old philosopher first obtained this mysterious agent, which numbers among its phenomena the mild radiance of the aurora borealis, the destructive force of the thunderstorm, and the fibrillation of a muscle, not to speak of its many marvellous applications in the world of arts, which are daily being multiplied and extended.

The simple experiment of Thales remained barren and unfruitful for rather over two thousand years, till the time of Queen Elizabeth, when her physician, Gilbert, made a trifling advance by showing that sulphur, wax, glass, etc., possessed properties similar to those of amber. In another hundred years Otto von Guericke invented the electric machine, and ere the close of the following century Galvani and Volta had given to the world those wonderful discoveries which, in their fuller development, have revolutionised society, and put a girdle round the earth more wonderful than Puck's, laying on the breakfast table of the New World the details of the coming day's business as it has just been transacted

¹ This lecture is published at the request of some of those who heard it some two or three years ago, and in the hope that it may be useful to others in want of a concise statement of the more important facts of medical electro-therapeutics.

in the Old, and which are now about to light our streets and houses, and it may be to propel our cars and cook our food.

It would have been strange, indeed, if an agent at once so manifold in its manifestations and so powerful in its operation had not been turned to use in medicine as well as in the arts. But progress in this direction was marred, as it so often has been in others, by preconceived theory. The shade of Thales dominated the physician; electricity was held to be an *anima*, a vital principle or form of life, and therefore more likely to benefit if administered in a vitalized condition. Patients were consequently made to hang their numb and palsied limbs in a tub containing electric eels (*Gymnotus electricus*); and even in recent times the electric discharge of the torpedo has been employed by the Arabians as a sovereign remedy in fever. But though amongst ignorant people such views may still prevail, they have long since been discarded by more enlightened practitioners. The very latest phase of this vitalistic idea—that, namely, which Galvani was the first to propound, that electricity is identical with nervous force—having been quite readily disproved by the simple expedient of passing a ligature round a nerve, or by cutting it; either procedure at once arrests the passage of the nervous force; but so long as the parts remain in contact, electricity passes readily, and produces all its usual effects.

We are as ignorant as Thales was as to what electricity really is, but we know a great deal more than he did as to the conditions of its development and its modes of action; and we also know it to be a remedy of proved value in the relief of pain, in the diagnosis and prognosis of various forms of paralysis, and in their treatment. In medicine we employ three so-called forms of electricity, named, after their discoverers, Franklinic, Galvanic, and Faradic; terms which do not, however, indicate three actually different kinds of electric fluid, but merely three conditions in which the same fluid may exist, and which possess properties varying more or less materially from one another.

FRANKLINIC or FRICTIONAL ELECTRICITY is that form of electricity discovered by Thales, and which continued to be the only one known down to the end of last century; it is also called static electricity, and when employed in the present day, it is used as developed by some one of the various modifications of the electric machine invented by Otto von Guericke in 1671. Electricity in this condition possesses certain peculiar properties. It exercises more considerable powers of attraction and repulsion than any of the other forms of electricity; it is in a state of great tension, that is, it has a powerful tendency to escape from any place where it is confined, or, as we might otherwise put it, from any body in which it is contained, so that it is either spontaneously dissipated or else shatters any jar in which it is being accumulated; it has also but a trifling amount of chemical activity. Faraday has

calculated that to produce electricity enough to decompose a single grain of water, the great Leyden battery of the Royal Institution would require to be charged by 800,000 turns of a powerful plate machine of fifty inches in diameter. If this charge of the battery were concentrated into a single spark, it would resemble a great flash of lightning, and yet the actual quantity would be so small as only to equal that developed in about five seconds by a single pair of Grove's battery. Faraday has also estimated that the quantity of electricity in action during a severe thunderstorm would correspond to the amount set free by the chemical action of one grain of water on four grains of zinc.

Static electricity is, as we can readily understand, both troublesome and difficult to handle, yet it was the only form available for medical use down to the beginning of this century, and it did good service then, as it does still in appropriate cases. There are several modes of employing static electricity; one of the best probably is the so-called electric bath. In taking this the patient is insulated, by being placed upon a stool with glass feet; he is then connected to the machine by a metallic chain, and is thus charged with electricity. If the patient be connected with the prime conductor, he becomes charged with positive or vitreous electricity; if with the cushions of the machine, he gets charged with negative or resinous electricity. This form of electric bath has been found extremely useful in relieving neuralgic pains and muscular spasms and tremors, as well as flutterings of the heart dependent upon abnormal innervation. Charging the patient in this way sets his hair on end, but produces no disagreeable sensations whatever. The moisture naturally existing in the atmosphere carries off the electricity so rapidly that to keep the patient charged he must be very carefully insulated—that is, separated by a non-conductor from the earth; the operation must be performed in a room as warm and dry as possible, and the plate must be kept in constant rotation. If it be thought desirable to localize as far as possible the escape of the electricity along the course of any particular nerve, this is very readily done by means of a hair brush passed slowly in the required direction close to, but not quite in contact with, the skin. A series of rapid, successive, and minute discharges of electricity take place between the body of the patient and each successive bristle, generating a feeling as of the passage of a current of cold air.

- As electricity is neither life nor nervous force, it is probable that it only modifies vital phenomena by modifying the chemical constitution of the agents producing them. In this respect it must be remembered that if static electricity possesses but little power of chemical decomposition, it must, from its high state of tension, have some mechanical advantages. In the form of an electric bath it permeates every tissue in the body, and may exert its influence with effect even in the central organs of the nervous system, where

trifling alterations may be fraught with momentous consequences. From this point of view it seems probable that of late years static or frictional electricity has been too much neglected, though the main reason for this has undoubtedly been the cumbrous nature of the machine for generating it, as well as the difficulty of fulfilling all the conditions needful for its successful employment.

If the knuckle of the operator, or, better still, a knob of metal connected to the earth by a metallic chain, is presented to the surface of a patient statically electrified, sufficiently near for the accumulated electricity to overcome the resistance of the intervening stratum of air, this electricity is discharged, not, as with the brush, as an imperceptible aura, but in the form of one or more sparks. This is called *Franklinization by sparks*. It is accompanied by a slight perception of "shock;" and if the sparks succeed one another rapidly, a certain amount of fibrillation is produced in the superficial muscles, and a certain degree of skin irritation is also produced, revealed by superficial reddening, accompanied by white circumscribed wheals, which disappear in an hour or less.

This method of electrization is doubly active, as it not only acts *per se*, but also through the imagination by means of the element of "shock" which it possesses. And the important influence of expectation and directed attention is well exemplified by the history of Perkins's metallic tractors, and all the wonders they performed, till put to silence by Dr Beddoe's bits of painted wood; or in that of the patient cured by Sir Humphry Davy of paralysis merely by having the bulb of a thermometer put under his tongue; or in the still more curious case related by Captain Franklin of the young Chippewayan who, having lost his wife in childbed, was enabled to nurse his boy with milk from his own breast; and we need not therefore be surprised at the occasional remarkable effects of an electric shock. To obtain this, however, in its greatest perfection, we must go a little beyond Franklinization by sparks, and make use of the Leyden jar, the shock from which is so powerful that Muschenbroek, its inventor, who received this shock accidentally, wrote to Reaumur, that "not for the kingdom of France would he expose himself to it a second time." You may therefore readily believe that shock thus caused has occasionally produced remarkable effects, and that when passed through the larynx it has been extremely successful in curing nervous aphonia, though it is said that, short of being hanged, there is nothing more unpleasant. A combination of several Leyden jars is called an electric battery, and may be made strong enough to fell an ox. We can regulate to a certain extent the amount of electricity employed by means of a Lane's electrometer, but even with every precaution the Leyden jar is the least satisfactory and most troublesome method of employing static electricity.

The term GALVANIC ELECTRICITY is somewhat of a misnomer, as the arrangement by which it is produced has nothing to do with the discoveries of Galvani, but is a mere modification of Volta's pile. This form of electricity is often simply called *galvanism* or the *continuous current*, and it ought also to be "*constant*;" but this latter quality depends very much upon the kind of battery employed, some batteries varying more than others in power, according as they have been more or less recently charged. While all galvanic batteries, therefore, supply a continuous current, some of them are more constant, that is, have a more uniform action, than others, and this constitutes one very important element in the selection of a battery for medical use; other elements being the price of the battery, the ease with which it is kept in order, and its portability, which last is not always a matter of importance, as in most cases we can take the patient to the battery if we cannot bring it to him. This form of electricity is developed by chemical decomposition; wherever that is going on, there we have electricity set free, no longer accumulated in a state of unstable equilibrium (static) as it is by the friction machine, but set free in a continuous current (dynamic) which possesses very different properties. Thus, the tension of dynamic is very much less than that of static electricity, but its quantity is enormously greater; and in virtue of this quantity it possesses chemical and thermic properties which are not approached by the franklinic electricity.

Without chemical action there is no development of galvanic electricity, hence plates of gold and platinum may be immersed in pure nitric acid without the most delicate test being able to detect the presence of electricity, because nitric acid acts chemically on neither of those metals. But if we add a single drop of hydrochloric acid, a current of electricity is at once set up, because nitro-hydrochloric acid acts upon both metals; and as it acts most upon the gold, that metal is said to be positive in relation to the platinum, which is called negative. In a voltaic circuit there is always a double current flowing, positive electricity passing from the positive to the negative metal, and *vice versâ*. Practically the negative current is usually ignored and the positive only attended to, but it is needful to remember this double current as an explanation of why the positive electrode or pole of a voltaic circuit or battery should always be found attached to the negative plate, and the negative electrode to the positive plate. The word electrode means simply a road or way for the electricity to pass, hence the positive electricity passes from the negative plate into the body, to be tested or decomposed by the electrode attached to it, which is called the positive pole or *anode*, because it reveals itself by producing effects which are known only to result from the presence of positive electricity. So also the negative current passes from the

negative to the positive metal, and out by the electrode attached to it, which is recognised to be the negative pole, or *cathode*, by producing the effects of negative electricity. If therefore ever at a loss to determine which of the electrodes is anodal and which cathodal, all we have to do is to put the two wires into an electrolyte, such as water, when oxygen is at once set free at the positive pole, oxidizing and altering the appearance of the wire if it be of oxidizable metal such as copper, while at the negative pole the wire retains its brightness, but gets covered with bubbles of hydrogen gas.

Galvanic or dynamic electricity is employed with great benefit in the relief of pain, tremor, and spasm; it is also absolutely indispensable in the diagnosis and prognosis of paralysis of various forms, where it enables us to speak with considerable certainty where formerly all was obscure and uncertain. Furthermore, it is equally indispensable in surgical electricity, where its chemical properties have been successfully employed in the electrolysis of tumours, of aneurisms, and of aneurismal varices, while its thermic properties have been used with equal success in the form of the galvanic cautery. In passing the continuous current through the body, when it passes upwards from the positive to the negative pole, it has been called the direct or ascending current, and has been supposed to dilate the bloodvessels and to increase the irritability of both muscle and nerve. When, on the other hand, the current passes from the positive to the negative pole downwards through any part of the body, taking the head as the centre, it is called the inverse or descending current, and is supposed to contract the bloodvessels and to diminish the irritability of both muscles and nerves. Both currents are useful in relieving pain and spasm, but the direct or ascending current is the more powerful and stimulating of the two. If only a few cells are in action, the application of the battery is not accompanied by any unpleasant sensation. Cell by cell may be introduced into the circuit with only the most trifling feeling of shock, and it is only when some considerable number of cells are suddenly applied or removed that the sensation is at all disagreeable. During the passage of the current, either no sensation is perceived, or only a general and diffused feeling of warmth, this being apt to become localized as a burning sensation at the positive pole, where local changes varying from erythematous redness up to positive blistering may simultaneously occur. When the direction in which the current passes is immaterial, these disagreeable results may be prevented by changing the direction of the current every few minutes, and most batteries are provided with the means of doing this. Muscular contractions are only produced by the variations in density of the current which occur at the moment of opening or closing the current. As it is necessary for diagnostic purposes to discover whether these contractions can be produced or

not, as well as the degree of readiness with which the muscles respond to the stimulus, every battery must be provided with the means of interrupting the current when desired. A ratchet-wheel, the teeth of which are alternately conducting or non-conducting, is the form of interrupter commonly supplied; but though convenient enough for some purposes, it can never replace an appropriate electrode with an interrupter directly under the control of the operator's finger. It is further advisable that an electrometer be attached to the battery, so that we may be certain of always employing currents of the same strength, as we might otherwise be very much misled by accidental variations.

FARADIC ELECTRICITY is that form of which Faraday is the great exponent. As produced in those instruments commonly employed in medical practice, it is an induced current of momentary duration, alternating in its direction, and of high tension. It resembles much more closely static or Franklinic than voltaic electricity. It penetrates the tissues less easily than either of these forms of electricity, and it has almost none of their catalytic powers, because it has almost no chemical or thermic properties, mainly because it has no proper poles, the direction of the current alternating so rapidly that the action of one instant is neutralized by that immediately following, the oxygen momentarily set free by the positive current being so instantaneously recombined by the action of the negative one that water remains apparently undecomposed. You have already learned that muscular contraction only takes place when the electric current is interrupted, you will not therefore be surprised to learn that in faradization, as the application of faradic electricity is termed, during which the current is being continually interrupted and its direction changed, we have a most readily available method of producing muscular contraction. Faradic electricity, indeed, acts so powerfully, not only on the muscles and nerves of motion, but also on those of sensation, and the phenomena produced are altogether of so marked a character, that we cannot wonder that when induction machines were first introduced, it was believed that at last the true and only source of medical electricity had been discovered—an opinion still held by many medical men, and one which was common to almost all up to quite recent times.

Within the compass of a single lecture it is impossible to give more than a mere general idea of the various uses which may be made of electricity. Surgeons make use of its chemical properties when they employ it to promote the coagulation of the blood in aneurisms, or as a cautery to remove or destroy tumours, while physicians are said to utilize its "vital effects." But electricity is a purely physical agent; there is nothing vital about it. It gives rise to what are called vital phenomena—phenomena exhibited in altered modes of life—only because it is capable of effecting within

the body the transformation of potential into kinetic energy, very much in the same way as—*mutatis mutandis*—it produces out of the body those chemical changes which occur, for instance, in the process of electrotyping. In the former case the effects are vital—result in phenomena evincing life—because of the nature of the agent evolving them; the ultimate cause is as physical—taking that term as the antithesis of vital—in the one case as the other. This transformation of energy is not necessarily accompanied by any evident result beyond a general improvement in health, a removal of morbid conditions, even such as have implicated the central organs of the nervous system, and it may be the cessation of pre-existing pain. But if, instead of being charged with electricity in a static condition, or having a current of a uniform density passed through it, the body is subjected to the passage of an electric current of varying density, each variation of that density is accompanied by an equivalent reaction of the muscles and motor nerves. This excitation, which is purely physical in character, does not occur when the current is weak or the variations in density are slowly produced, but is proportionate to the strength of the current, and to the rapidity with which these variations are brought about; hence it chiefly occurs co-incidentally with the reversal of the current in an induction machine, or with the opening and the closing of a voltaic current. The whole system of the electric diagnosis of the various forms of paralysis, and of their electric treatment, rests upon this basis.

Electricity is no doubt capable of profoundly modifying the nutrition of every organ in the body, but its most remarkable effects are so readily produced in and through the nervous system that its therapeutic use has been mainly confined to it,—first of all to the treatment of its peripheral lesions; but of late years even those central lesions upon which peripheral manifestations so often depend have been successfully attacked by it.

General disturbances of the nutrition may be effectually reached and often remedied by an electric bath of positive or negative static electricity; or by charging the patient with galvanic electricity, positive or negative, as may seem most suitable; or first the one form may be tried for a few days, and that failing, the other; but the rapidly alternating currents of faradic electricity have but a slight penetrating power, and are of little use when the parts to be modified lie below the skin. When, however, it is the nutrition or sensitiveness of the skin itself or of the nerves and bloodvessels distributed to it which we wish to modify, there is no better form of applying electricity than by feeble faradic currents, applied over large surfaces by means of broad electrodes, or, what is perhaps better, through water. One limb being placed in a pail of water along with one electrode, and the other limb with the other electrode in a second pail of water, the current diffuses itself imperceptibly over the surface of the body and produces by-

and-by a most marked improvement, as we have frequent occasion to see in the dysæsthesia of locomotor ataxy, as well as in those cases of arterial hyperæmia or venous stasis of nervous origin which give rise to abnormal sensation of heat and cold in a whole limb, or in one or more of its digits.

The therapeutic use of electricity is yet in its infancy, and though by its means we can often obtain results which are otherwise unattainable, we are not as yet in a position always to be able to say what form of electricity is most likely to be useful. By-and-by, however, by a collation of cases we may be able to attain to greater certainty in this matter. This uncertainty is perhaps most marked in the case of *Neuralgia*, or painful affections of the nerves. In some cases of neuralgia we find static electricity in the form of the electric bath of great service; while in others the very converse of this, the superficial application of faradic electricity by means of a metallic brush—the electric moxa—is most useful; and in still other cases, and these perhaps the most numerous, the catalytic action of the galvanic or continuous current is by far the most efficacious. In regard to the use of the continuous or galvanic current for the relief of pain three distinct methods have been propounded:—1. The old-fashioned direction method of applying the anode or positive pole upon the plexus or root of the nerve we wish to influence, and the cathode or negative pole upon its painful points or peripheral terminations, so as to send through it a descending current. 2. The polar method, propounded by Brenner, who regards each pole as having a special curative action; in this method the best plan is to apply the cathode on the nerve trunk as near as possible to the focus of the disease, and afterwards on the painful points, while the anode is applied upon some indifferent part of the body, as the sternum. 3. The indirect method introduced by Remak, of modifying the circulation and nutrition of the parts affected by acting through the sympathetic ganglia in the neck; this method has been highly praised by some, and as greatly depreciated by others. In the present state of our knowledge of electric therapeutics, and the means by which curative results are attained, it is one which we cannot afford to depreciate or lose sight of. Whichever method of treatment we select, each application should last from two to ten minutes, and be repeated once or twice a day. Any relief which may result is usually perceived at once, and persists for twelve or twenty-four hours or thereby, becoming permanent after a variable number of applications. Should no improvement at all follow half-a-dozen sittings, it is scarcely worth while continuing them, and the case must usually be regarded as unsuitable for electric treatment. In exceptional cases a more persistent use of this treatment may, however, be followed by an exceptional and sometimes a remarkable improvement.

But however striking the results obtained in trophic and pain-

ful affections, it is in lesions of motility that electricity has its greatest triumphs, and of late years it has become perfectly indispensable in these affections, not only for their treatment but also for the diagnosis of the seat of the lesion, and for prognosis.

Of all the affections of motility, *spasms* and *contractures* are the least satisfactory objects for treatment, mainly because they are amenable to no fixed plan and require to be treated empirically, the results being uncertain—very satisfactory and permanent in many instances, and in others perfectly fruitless. We may treat the spasm by attempting to influence catalytically the nutrition of its supposed central cause, by means either of a bath of static electricity or by passing a current of galvanic electricity through the spinal cord by means of large electrodes; we may faradize the affected muscles, so as to secure ultimate relaxation by primary overstimulation; we may excite the sensory nerves of the skin over the parts affected by faradizing them with a metallic brush, so as to get a centripetal irritation powerful enough to relax the spasm; or we may pass a descending current through the nerves and muscles affected, with the view of lowering their excitability. The latter mode is most generally useful, and ought to be first tried, but there is no certainty that it will be more successful in relieving spasm than any of the other methods mentioned.

The case is somewhat different in paralyses of motility; in them the behaviour of the muscles and nerves to currents of varying intensity gives us very important information; it enables us to determine the anatomical seat of the lesion, gives us a sure foundation for prognosis, and is in itself our most valuable therapeutic agent. For all these purposes the continuous or battery current is indispensable, but the experimental investigation cannot be completed without the use of the induced current, because the excitability of the motor nerves and muscles for these two currents is by no means always the same.

When we apply the two poles of a galvanic battery to any part of the body, currents of positive and of negative electricity pass in opposite directions from one pole to the other; phenomena which are well developed at the one pole on the closure of the circuit appear also at the other pole on the circuit being opened, but less fully developed and more evanescent. From this twofold character of the electric current it follows that the most unskilful application of the electrodes can scarcely fail to give some information and produce some benefit; but from the action of the two poles being as diverse in their physiological as in their chemical actions—the one exciting and the other depressing—it is but reasonable to conclude that, if we could bring the part to be investigated more fully under the influence of the one pole or the other, we should be able to obtain clearer information as to its actual condition, and we should also get therapeutic results of a more uniform and decided character. Fortunately we can do this

very certainly by means of a method, already referred to, devised by Brenner of St Petersburg, and called by him the *polar method*. This is based on the well-known fact that a state of depression exists in all the tissues in the neighbourhood of the one pole, and a state of excitement in those in the neighbourhood of the other. If then we wish to obtain a clear and distinct idea of the action of the electric current upon any nerve or muscle, all that is requisite is to remove the one pole to some part of the body beyond the region under the influence of the other, and to place it in such a position that the electric current may radiate as little as possible between the first electrode and the peripheral distribution of the nerve on which it is applied. The electrodes must, therefore, be so placed that we shall have a descending current when investigating the influence of the cathode, and an ascending current when examining that of the anode. A very convenient position for the second electrode—when there is no special reason for selecting another—is over the upper part of the spinal column, because when it is placed in this situation muscular contraction is most readily brought about, while the manner of its occurrence is not liable to be influenced. Putting the two electrodes upon similar nerves or muscles upon opposite sides of the body has also been recommended, and this has all the more appearance of being advantageous that we must usually compare the reactions of one side with those of the other. But comparisons made in this way are somewhat “odorous,” as Mrs Malaprop would say, for the actions of the two poles being diverse, no certain information is obtained in this way. For the induced current, indeed, there is no better procedure, because with it the direction of the current is continually alternating; but with the battery current it is needful occasionally to reverse its direction, and compare the one set of contractions with the other; or, better still, we may employ a forked electrode after the manner recommended by Brenner, one electrode being placed upon some indifferent spot, such as the upper part of the spine, while the other is split, and the two ends applied over similar muscles or nerves on opposite sides of the body. But it is one thing to split an electrode, and quite another to halve the current, and, except with certain precautions, even this mode affords no perfect guarantee that we are observing equivalents. A sort of practical certainty is, however, attainable with moderate care, and with this we may be contented.

I suppose there are still some who imagine that the object of electrical investigation is to determine whether a muscle is paralysed or not; but indeed a muscle may be readily thrown into action by the electric current, and yet it may be more completely paralysed to the will, and there may be less hope of its recovery than in the case of another in which galvanic reaction is almost entirely absent. Of course, unless a nerve of motion or a muscle reacts normally to the galvanic current, there is something

wrong, and the great object of electric investigation is to discover what this is, and where its cause is situate, as well as to enable us to give a correct prognosis and lay down a definite line of treatment. Motor nerves and muscles only exhibit their reaction to the electric current by muscular contractions, and it is only by differences in the manner in which these contractions occur that we can ascertain variations in that reaction, and deduce their cause. Muscular contraction is most easily produced when the negative pole (the cathode) is on the nerve or muscle, and occurs at the moment the circuit is closed; this, the lowest grade of normal muscular contractility—that is to say, that which is produced by the minimum of current having any action at all—may be called cathodal closure contraction, and denoted by the letters C.C.c. The second grade is characterized by the addition to this momentary cathodal closure contraction of a second momentary contraction occurring also when the circuit is closed, with the positive pole (or anode) on the muscle. This we call the anodal closure contraction, and denote by the letters A.C.c.; and this is speedily followed by the third grade, in which contraction follows the opening of the circuit with the anode on the muscle, anodal opening contraction, A.O.c. In the fourth grade the cathodal closure contractions cease to be momentary, and become continuous or tetanic in character, that is, they persist during the passage of the current; this is marked by the letters C.Te. The fifth grade is characterized by the occurrence of cathodal contractions at the moment of opening the circuit C.O.c. The sixth and highest grade, which, according to Brenner, is not always attainable, is marked by prolongation of the anodal closure contraction. As each succeeding grade is reached, the phenomena of those preceding are intensified; this is denoted by employing small letters for the earlier stages to mark the slighter forms of the contractions, and capital letters to denote the more forcible contractions. In this way these various degrees of normal muscular reaction may be thus expressed:—

1. C.C.c.
2. C.C.c. + A.C.c.
3. C.C.C. + A.C.c. + A.O.c.
4. C.C.CTe. + A.C.C. + A.O.c.
5. C.C.CTe + A.C.C. + A.O.C. + C.O.c.

This formula represents the normal mode in which electric reactions occur in healthy muscles, either when excited directly or through their healthy motor nerves. Any deviation from this norm indicates some pathological change in one or other, and this deviation is either qualitative (some change in the form or mode of contraction), or quantitative (increase or diminution of the galvanic excitability). To determine these deviations accurately we must employ a galvanometer, so that we may be always certain

of using exactly the same strength of current in testing similar muscles and nerves on opposite sides of the body. A want of precision in this, and an imperfect recognition of the different actions of the two poles, have undoubtedly been the cause of much of that obscurity which still exists in regard to the medical employment of electricity. A clear understanding of these normal reactions is most readily obtained by testing any of the superficial motor nerves—such as the peroneal nerve of a healthy man; and by applying the two poles over similar nerves on opposite sides of the body, a gradual increase of the strength of the current, and an occasional reversion of its directions, will speedily teach us all we desire to know. Quantitative variations in electric irritability of motor nerves or muscles are often observed by themselves, but qualitative variations are invariably accompanied by quantitative changes. In investigating these changes we must be careful to distinguish nerve from muscle, because the alterations of electric excitability are entirely different in each. Erb, who has studied this subject with great care, has given diagrammatic representations of three typical varieties of these qualitative and quantitative alterations of electric excitability, to which he has given the name of the “Reaction of Degeneration,” because they are intimately associated with histological degeneration of the structures implicated. This reaction of degeneration occurs whenever peripheral nerves are mechanically injured, however this may be brought about, by division, crushing, or compression, whatever the cause may be. The only exceptions to its localisation in peripheral nerves are: 1st, lead palsy, in regard to which as yet we know not whether it is central or peripheral; and 2d, the so-called spinal paralysis of children, which of late years has been generally regarded as of central origin. Two or three days after the occurrence of a paralysis of this kind the *nerve* will be found to exhibit diminution both of faradic and also of galvanic excitability, without any obvious qualitative change. A stronger current is required to produce the minimum contraction, and the maximum contraction obtained with the strongest current is considerably diminished. This goes on increasing, until sometime before the end of the second week electric excitability entirely disappears, and we are no longer able to produce muscular contraction—through the nerve—either by faradic or galvanic currents. This condition begins close to the lesion and spreads rapidly to the periphery; it is permanent in incurable cases, but in all others electric excitability, to both currents, slowly returns. The power of voluntary movements is, however, the first to return, and for a few days or weeks the nerve is capable of conducting the impulses of the will, while it is still incapable of reacting to electric stimuli; for this Erb supposes he has discovered an anatomical reason, but whether this supposition be right or not, the fact is no less singular than true, and gives

another proof of the well-known fact, that however indispensable electricity may be in determining the seat of the lesion, or for treatment, it is not always to be depended upon for positive information as to the presence or absence of paralysis.

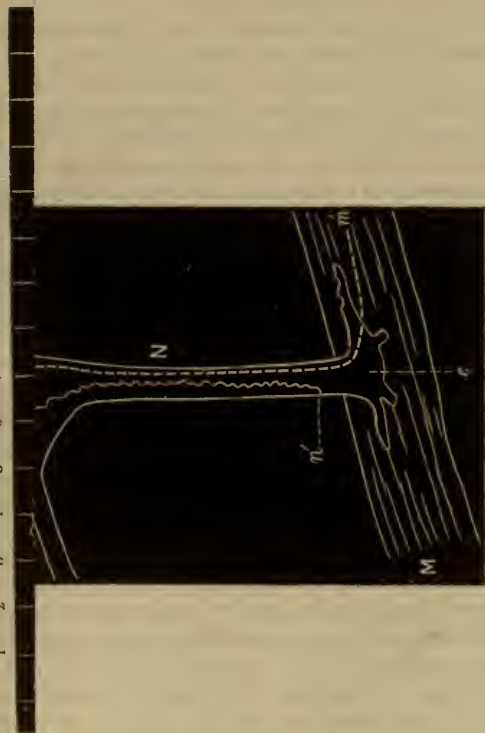
Paralyzed *muscles* behave precisely like nerves to the ordinary faradic or to a rapidly interrupted galvanic current; before the end of the second week the current induces no response, but in curable cases faradic excitability returns after the commencement of regeneration, and usually somewhat later than in the nerves. If, however, the interruptions of the faradic current be very slowly produced, as is the case with galvanism when thus employed, the muscles react equally with both, but very differently from what they do in health. At first the galvanic excitability falls considerably, but before the end of the second week it begins to rise and to exhibit certain remarkable qualitative changes. The muscles react to currents too feeble to produce contractions in healthy muscles, and the movements produced, instead of being rapid and momentary as in health, are slow and protracted. There is also a remarkable change in the normal formula for electric excitability; thus the anodal closure contraction speedily equals the cathodal, $A.C.c = C.C.c$, and may even surpass it. The reverse is the case with the cathodal opening contraction $C.O.c$, which increases at a relatively more rapid rate than the anodal opening contraction, so that the two are speedily equal, $C.O.c = A.O.c$, the former ultimately being earlier and more powerful than the latter, so that there is a complete inversion of the normal formula for muscular contraction following electric excitation. The contractions of the muscle gradually become slower, their capacity to react to currents of short duration diminishes, and contractions ultimately cease to occur at all on the opening of the circuit, obviously because the stimulus then applied is but of short duration. This condition may last for three, six, or eight weeks, or for much longer. By and by even galvanic excitability begins to diminish, the qualitative changes remaining the same, so that in incurable cases a feeble anodal closing contraction ($A.C.c$) is the latest indication of vitality shown by the vanishing muscle. When recovery takes place, voluntary movement is the first to return, next the galvanic and faradic excitability of the nerve, which are usually coincident in point of time, and lastly the faradic excitability of the muscle in which galvanic excitability has never wholly disappeared, a recurrence to the normal formula of reaction being the earliest indication of returning power.

The three diagrams on the next page, borrowed from Erb, afford a graphic illustration of the three typical varieties of paralysis just referred to:—Fig. 1, Recovery rapid; Fig. 2, Recovery slow; and Fig. 3, No recovery.

The diagram, Fig 4, also borrowed from Erb, while perfectly

FIG. 1. *Recovery Rapid.*

Degeneration of the nerve.		Atrophy and multiplication of nuclei in the muscular fibres.						Regenera- tion.		Cirrhosis.	
1	2	3	4	5	6	7	8	9	10	11	12 weeks.



M, Muscular fibre.
 N, Nerve fibre with its ending, *e*.
 G, Multipolar spinal ganglion cell, from the anterior horn of grey matter.
e, Path of impulse from brain (lateral fasciculi).
r, Path of reflex stimulation from sensory sphere.
m, Trophic centre for the muscle.
n, Trophic centre for the nerve.
m-m', Path of trophic influence to the muscle.
n-n', Path of trophic influence to the nerve.

ideal, inasmuch as the very existence of trophic centres is denied by some, may be of use in enabling you to realize the connexion between certain pathological changes and the phenomena of reaction, and this connexion has been very concisely tabulated as follows:—¹

Seat of Lesion.	Prominent Symptoms.	Electric Reactions.	Name of Disease.
c	{ Paralysis, no atrophy . }	All normal.	{ Lateral sclerosis and cerebral disease.
c and m .	{ Paralysis, muscular atrophy }	{ Nerve: normal. Muscle: reaction of degeneration. }	{ Amyotrophic lateral sclerosis.
m	{ At first no paralysis; muscular (later nervous) atrophy . }	{ Nerve: normal, later diminished. Muscle: qualitative alteration, quantitatively diminished. }	{ Progressive muscular atrophy, Bulbar paralysis.
G	{ Paralysis, atrophy of muscles and nerves, abolition of reflex actions . }	{ Nerve: { Reaction Muscle: { of degeneration. }	{ Poliomyelitis anterior (infantile paralysis).
N	{ Paralysis, no atrophy . }	All normal.	{ Light form of peripheral.
N and m .	{ Paralysis, muscular atrophy . }	{ Nerve: normal. Muscle: qualitative and quantitative changes. }	{ Middle form of peripheral.
N, m' and n'	{ Paralysis, muscular and nervous atrophy . }	{ Nerve: { Reaction Muscle: { of degeneration. }	{ Severe form of peripheral.

It is unnecessary at this time to enter more at large into the subject of medical electricity, which can only be fully treated of in direct connexion with the various diseases in the diagnosis or treatment of which it is employed. Before concluding, however, I must point out that electricity is even of more value in determining the presence of sensory than of motor paralysis, and that degrees of anæsthesia so slight as to be otherwise undiscoverable may thus be not only detected, but also referred to their appropriate places of origin, as peripheral or central. To do this it is neces-

¹ *Vide A Practical Introduction to Medical Electricity.* By A. de Watteville. H. K. Lewis. London: 1879. Which may be recommended as one of the most accurate and concise manuals upon the subject, while Brenner's *Electrotherapie* (Giesecke and Devrient. Leipzig: 1869. 2 Bände) is even yet the most thoroughly scientific of practical treatises.

sary to employ a forked electrode, not only for reasons already stated in reference to the action of the poles, but also because it is important to make a simultaneous comparison of two similar parts of the body, as we cannot otherwise so readily measure relative degrees of sensibility; and we must also examine with care not only the condition of the skin, but also the state of the several parts—so far as attainable—of the sensitive nerve leading to it, so as to discover whether or no a current acting on any part of the nerve is capable of producing its appropriate excentric sensation, as an indication that the lesion is peripheral and not central, or the reverse.

In our great New Infirmary about to be opened, the Managers have agreed to fit up an electric room in which we shall be able to carry on electric treatment in a more perfect manner than has hitherto been possible; and this is quite necessary to place this Infirmary in its proper position, for not only is it impossible to diagnose or to treat many diseases, especially nerve diseases, without electric appliances, but some of these—even central lesions—are amenable to no other treatment; so that by this concession they not only provide for the efficient teaching of our students, but they also ensure that our patients shall have the means of being properly treated, and they thereby take the best means to secure that a saving shall be effected in the expense of treatment.

ARTICLE II.—*Statistical Report of Results of Operations Performed*
by PROFESSOR SPENCE in his Department of the Edinburgh
Royal Infirmary, from October 1876 till May 1878.

(Continued from page 402.)

STATISTICAL TABLE.—WINTER SESSION, 1877-78.

<i>Amputations.</i>				Total.	Recovered.	Died.
Upper Extremity—						
For Injury—Primary—Through upper arm,	.	.	1	1	0	
Secondary, for burn „ „	.	.	1	1	0	
For Disease—Malignant tumour „ „	.	.	1	0	1	
For Injury—Primary—Through forearm,	.	.	1	0	1	
Total amputations of upper extremity,	.	.	4	2	2	
Lower Extremity—						
For Injury—Primary—Through leg, . . . .	.	.	1	1	0	
For Disease—Through thigh, . . . .	.	.	2	2	0	
Through leg, . . . .	.	.	1	1	0	
At ankle-joint, . . . .	.	.	2	2	0	
Partial amputation of foot, . . . .	.	.	3	2	1	
Total amputations of lower extremity,	.	.	9	8	1	
Total amputations, . . . .	.	.	13	10	3	

Excision of Joints.

Upper Extremity—	Total.	Recovered.	Died.
For Disease—Shoulder,	1	1	0
Elbow,	4	4	0
Total Excisions of upper extremity,	5	5	0
Lower Extremity—			
For Disease—Hip,	1	1	0
Knee,	2	2	0
Total excisions of lower extremity,	3	3	0
Total excisions of joints,	8	8	0

Excisions of Tumours.

Partial excision of lower jaw and glands,	1	1	0
Mammæ, for scirrhus,	3	2	1
Mamma, for fibrous tumour,	1	1	0
Lipomatous tumour (in epigastric region),	1	0	1
Tumour in upper dorsal region,	1	1	0
Cystic tumours (cervical),	2	2	0
Parotid tumour,	1	1	0
Tongue, for cancer,	1	0	1
Half tongue, for cancer,	2	1	1
Bursa over patella,	1	1	0
Total excisions of tumours,	14	10	4

Operations on Bones.

Resections—			
Entire shaft and upper articular surface of ulna, for acute necrosis,	1	1	0
Removal of half of tibia, for acute necrosis,	1	1	0
Part of metatarsal, for painful cicatrix,	1	1	0
Sequestrotomy—			
For necrosis of femur,	3	3	0
For necrosis of tibia,	2	2	0
Trephining—			
Removal of anterior wall of frontal sinus, for comminuted fracture,	1	1	0
Total operations on bones,	9	9	0

General Operations.

Gastro-Intestinal System—			
Strangulated inguinal hernia,	2	1	1
Strangulated congenital inguinal hernia,	1	0	1
For hæmorrhoids,	2	2	0
Genito-Urinary System—			
Perineoraphy,	1	0	1
For old perineal fistula,	1	1	0
Holt's operation for stricture,	1	1	0
Lithotomy,	1	1	0
Spina bifida tapped and injected,	1	0	1
Removal of large warty vegetations from anus,	1	1	0
Total general operations,	11	7	4
Total operations performed,	55	44	11

EPITOME OF CASES.

Amputations—Upper Extremity, for Injury.

Primary.—Daniel M'L., ætat. 60. Injury, compound comminuted fracture of bones of forearm, great laceration of soft parts implicating elbow. Arm amputated at middle third of humerus. Made a good recovery.

Primary.—Marcus C., ætat. 37. The patient, a man of very intemperate habits, fell when intoxicated, and had his hand and wrist crushed to a pulp by the wheel of a road locomotive, of which he was in charge. The amputation was performed through the middle of forearm on 1st December. Became feverish, with tendency to delirium tremens. Secondary hæmorrhage occurred on the 7th, and again on the 9th December, from different vessels, but was arrested without much loss of blood. A severe attack of diarrhoea and vomiting set in forty-eight hours before his death, which occurred on the 10th December, from exhaustion.

Secondary.—Wm. S., ætat. 6. For the result of severe burn, involving both dorsal and palmar aspects of forearm, with great destruction of integuments. The child was rapidly sinking from the irritation and discharge, but the parents opposed amputation. For about a fortnight the limb was treated in the tepid bath, with great relief to irritation and pain, and with improvement of his general health. The parents were at last convinced of the necessity for amputation, which was performed at the middle of upper arm. He made a rapid recovery when relieved from source of irritation.

Amputation for Disease.

Mary J., ætat. 46. This patient had been under my care, ten years before, for a tumour situated towards the outer side of the ante-brachial triangle. The growth, which was about the size of a large hen egg, was easily removed, being encapsuled, and its structure was that of a simple fibrous tumour. On her admission on the present occasion, "there is a tumour in the immediate vicinity of the cicatrix, but not connected with it, the scar being healthy and quite movable. The new growth seems to be overlapped by the margin of the supinator longus, and somewhat to involve it. It is of an elongated ovoid form, or spindle-shaped, and excessively painful, so much so that the patient gets no rest, and is quite exhausted and depressed. The growth has been of rapid growth, and accompanied by general cachectic condition." The history and character of the growth were evidently those of malignant neuroma of the musculo-spiral nerve, and the supinator and neighbouring muscles probably involved in the malignant infiltration. I accordingly advised the patient to submit to amputation, but she was depressed and had a presentiment of fatal issue, and it was only after some weeks' endurance, and when much exhausted, that her suffering made her submit. Amputation at the upper part

of arm was performed on the 20th of February ; but though at once relieved of the neuralgic pain, her spirits continued depressed. Secondary hæmorrhage, not of large amount nor from any special vessel, but a general oozing, took place on the morning of the 26th, which was arrested by styptics and pressure. After that she sank rapidly, and died the same day. The woman had for some years suffered from mitral disease.

Amputations of Lower Extremity—Amputations through Thigh for Disease.

CASE 1.—John M., ætat. 16. Advanced stage of gelatinous degeneration. Joint thoroughly disorganized, and general health much affected by hectic. Patient made a rapid recovery after the amputation. The wound was entirely healed by the sixteenth day after the operation.

CASE 2.—James I., ætat. 12. I had performed excision of the knee-joint in this case fourteen months previous to his admission on the present occasion, and he left with a firmly ankylosed knee in the straight position, and free from all pain or uneasiness. He was, however, of a delicate constitution, and his friends very poor. About six weeks prior to his readmission he complained of pain at the lower and inner part of thigh. I found, on his coming into hospital, that an abscess had formed. This I opened, and found a cavity containing dead bone. I enlarged the opening with a gouge, and extracted a large sequestrum. The cavity, however, continued to discharge thin, unhealthy pus, and the pain continued. Under these circumstances I performed amputation through the lower third of femur. The wound healed well, and he was discharged cured on the 31st of January.

Leg, for Injury.

Primary.—James G., ætat. 16. Had his foot and ankle crushed by the wheel of a tramway-car. Amputation by long posterior flap at middle of leg. Made a good recovery.

For Disease.—James Y., ætat. 14. Disease of ankle and lower fourth of tibia. Amputation at middle of leg by long posterior flap, January 23. The stump healed almost entirely by primary union, and he was discharged cured on the 21st of February.

Amputation at Ankle-Joint, for Disease.

CASE 1.—David M'R., ætat. 6. Disease, caries of tarsus ; discharged cured. Operation, 13th February ; discharged 11th April.

CASE 2.—James M., ætat. 8. Extensive caries of tarsal bones. Amputation, 13th February. Discharged with thoroughly consolidated stump, 30th March.

Partial Amputations of Foot, for Disease.

CASE 1.—George H., ætat. 50. Malignant enchondroma, in-

volved the two internal metatarsal at their distal extremities. Large stellate cells found on microscopic examination of growth. Hey's amputation performed on the 5th December. Irritative fever and violent delirium supervened on the third day, and he died on 12th December, seventh day after the operation.

CASE 2.—Wm. A., ætat. 9. A very strumous child, with disease of metatarsal bone of great toe, and abscess in popliteal space of same limb. Metatarsal bone and great toe removed by disarticulation from internal cuneiform bone. Abscess in popliteal space opened. Chalybeate tonic treatment. Cured.

CASE 3.—Joseph K., ætat. 39. Disease of second metatarsal bone and corresponding toe. Removal of toe and distal half of metatarsal bone. Cured.

CASE 4.—Rebecca M., ætat. 16. Reamputation of metatarsal bone of great toe for painful cicatrix. The toe had been amputated some months previously in the country, leaving a good-looking but excessively painful stump. As the pain was generally diffused over the whole cicatrix, I divided the lower half of the metatarsal bone, and removed it, along with the integument and cicatrix of stump. The patient was dismissed perfectly cured.

Excisions of Joints—Shoulder.

George F., ætat. 4. Admitted on account of abscess under deltoid muscle. This was opened freely. On examination with the finger, the tuberosities and head of humerus were found affected by cario-necrosis. Excision of the head and upper part of shaft, above the surgical neck of the humerus; were excised by internal longitudinal incision, a small counter-opening for drainage being made at the lower and posterior edge of the deltoid. The glenoid cavity was healthy. Operated on, 7th December. Discharged cured, 22d January.

Elbow-Joints.

CASE 1.—Robert W., ætat. 16 years. Advanced gelatinous disease of elbow-joint. Excision of joint by single longitudinal incision. Cured.

CASE 2.—Andrew H., ætat. 6. Gelatinous disease and secondary affection of articular surfaces of bones. Excision. Cured.

CASE 3.—Christina T., ætat. 40. Gelatinous disease. Excision, 6th March. Discharged cured, 11th April.

CASE 4.—Margaret S., ætat. 7 years. Gelatinous disease. Excision of joint. Discharged cured.

Excisions of Joints—Lower Extremity.

Excision of Hip-Joint.—Mary M'D., ætat. 15 years. This girl was admitted on account of abscesses over and near the trochanter-major, and also at inner and upper part of thigh. Some of the abscesses had burst, leaving sinuses, and the continued unhealthy

discharge from these had greatly exhausted the patient. The abscesses and sinuses were freely opened, and the finger detected caries of the great trochanter and neck of the femur. The head could not be felt, as the capsular ligament seemed entire. On the 14th November I performed excision by slightly curved incision, about four inches long, including the existing openings. The capsular and round ligaments were unaffected, and I required to make a small transverse incision about the middle of the long incision to divide the condensed textures, so as to open the capsule and disarticulate the head of the bone, which was covered with cartilage, and of normal appearance. On section, however, the caries condition was found to involve the cancellated structure of the head of femur. The acetabulum was quite sound. A counter-opening was made at inner side of thigh for drainage. The large wound gradually healed, and she was discharged to the Convalescent House, from which she went home without returning to hospital.

Knee-Joint.

CASE 1.—Margaret G., ætat. 14. Disease, gelatinous degeneration. Operation of excision by curved transverse incision was performed 7th November, and the patient was discharged cured, with a firmly ankylosed knee, on the 21st February.

CASE 2.—Elizabeth S., ætat. 23. Knee-joint affected with gelatinous degeneration of synovial membrane and incipient secondary affection of articular ends of bones. Excision of joint performed 21st November; discharged, with knee thoroughly healed and ankylosed, 28th February.

Operations for Necrosis—Resection in Acute Necrosis.

James S., ætat. 10. This boy was admitted suffering from suppuration over the inner side of the forearm, and extending to lower part of upper arm. The history of the case pointed to acute osteitis and necrosis, and there was reason to fear that the elbow-joint was involved. I made an incision into and evacuated the large abscess. The ulna was felt bare, but the collection of pus was apparently external to the elbow-joint. The cavity of the abscess was well washed out with carbolic lotion. Next day I extended the incision the whole length of the forearm, separated the periosteum from, and resected the ulna below, the attachment of the brachiiæus anticus, and raised it from the periosteal sheath. In doing this, the shaft of ulna separated from its styloid epiphysis, so that the entire shaft, from a little below the coronoid process, was removed. The limb was placed in a splint and slung; the irritative fever and other constitutional symptoms subsided, and the wound of the forearm granulated kindly. In about a week, however, another abscess formed at the anterior aspect of elbow. On opening this I found the joint involved, and at once extended the posterior incision and disarticulated the upper end of the

ulna, and found the greater sigmoid cavity had become affected by cario-necrosis. Thus the entire ulna, with the exception of its styloid epiphysis, was removed. The patient made a good recovery, new osseous deposit taking the place and form of not only the shaft, but articular extremity of the ulna, and requiring constant passive motion to prevent ankylosis at elbow. This was carefully attended to whilst in hospital; but the boy's friends insisted on taking him home earlier than I wished, so that I cannot speak as to the mobility of the elbow-joint, as he came from a distance.

Resection and Removal of Upper Half of Tibia, for Acute Necrosis.—R. M., ætat. 6. General symptoms subsided after operation. Complete repair by new bone and cure.

Operations in Chronic Necrosis—Removal of Sequestra.

CASE 1. *Disease, Necrosis of Tibia.*—Jonathan G., æt. 62. Operation, 26th October. Discharged 20th December, cured.

CASE 2. *Disease, Necrosis of Femur.*—James I.,¹ æt. 12. Operation, 26th October. Amputation performed 21st November. Excision of knee performed 14 months previously.

CASE 3. *Disease, Necrosis of Tibia.*—William G., æt. 6. Operation, 15th January. Discharged 16th April, cured.

CASE 4. *Disease, Necrosis of Femur.*—James W., æt. 11. Operation, 19th March. Discharged.

CASE 5. *Disease, Necrosis of Femur.*—Alexander F., æt. 9. Operation, 2d April. Discharged.

Osteotomy for Injury of Tibia.

John A., æt. 23. This patient fell from a considerable height, and through the thick plate-glass roof of a saloon. He had slight cerebral concussion, and had sustained a severe lacerated wound at upper part of leg. On examination I found that a thick triangular portion of glass was impacted in the tibia; this was broken off rather short, so that little grasp was afforded to extracting forceps. These were tried, however, bare and also covered with lint, as the forceps slipped from the surface of the glass, but it was impossible to move it. I resected the surrounding bone with a gouge chisel, and then, by getting a trepan lever under the glass, removed it, and subsequently removed the surrounding injured bone. The wound healed well, and the man was dismissed cured, without suffering any constitutional disturbance from his rather severe injuries.

Tumours—Scirrhus Mammæ.

CASE 1.—Elizabeth D., æt. 29. Operation, 19th October 1877. Discharged 3d January 1878, cured.

CASE 2.—Isabella R., æt. 61. Operation, 27th February. Erythema appeared 28th February. Death, 4th March.

¹ See Amputations,

CASE 3.—Mary M., æt. 53. Operation, 13th March. Discharged.

CASE 4. *Fibrous, from Mamma*.—Isabella L., æt. 25. Operation, 25th March. Discharged 8th April, cured. Two walnut-sized tumours removed from left mamma.

CASE 5. *Resection—Removal of Lower Jaw from Symphysis to near the Angle, with Cancerous Submaxillary Gland*.—James N., æt. 60. An epithelioma of the lower lip had been destroyed by caustic in the country about a year before his admission. The submaxillary and lymphatics had enlarged and become adherent to the lower jaw. The whole diseased mass, together with a portion of the mylo-hyoid muscle, were removed, and the patient made a rapid recovery. Operated on, 6th February. Discharged cured, 26th March.

CASE 6. *Lipoma*.—John M., æt. 60. Tumour situated in epigastric region. Operation, 6th March. Sudden suppression of urine, 8th March. Death, 11th March.

CASE 7.—Mary S., æt. 52. Operation, 15th March. Discharged 22d April, cured. Tumour situated in dorsal region.

CASE 8. *Parotid Tumour*.—William T., æt. 21. Operation, 28th December. Discharged 24th January, cured.

CASE 9. *Cystic*.—James MacC., æt. 26. Operation, 26th December. Discharged 31st December, cured.

CASE 10. *Wen*.—John C., æt. 50. Operation, 26th January. Discharged 2d February, cured.

CASE 11. *Bursal Tumour*.—Jane N., æt. 50. Excision of semi-solid bursal tumour from over the patella. Wound healed almost entirely by primary union.

CASE 12. *Spina Bifida*.—Robert M., æt. 4 months. Operation, tapped twice and injected with iodine (9th and 17th November). Death, 18th November.

Excision of Tongue.

CASE 1.—Robert R., æt. 64. Operation, 16th January. Death, 18th January. For cancer of tongue. Patient had been a heavy drinker for a number of years. Mitral systolic murmur.

CASE 2.—Margaret W., æt. 58. Operation, 1st February. Discharged 23d February, cured. Half tongue removed.

CASE 3.—Marion R., æt. 52. Half tongue removed. Operation, 9th April. Death, 24th April.

General Operations—Herniotomy.

CASE 1.—Alexander W., æt. 21. Operation, 16th February. Death, 26th February. For strangulated congenital inguinal hernia. At the time the strangulation occurred the patient was suffering from advanced pneumonia of both lungs, waxy degeneration of liver, spleen, and kidneys. The hernial symptoms were quite relieved, but the patient died, exhausted by the pre-existing morbid conditions.

CASE 2.—James M'I., æt. $1\frac{1}{2}$ years. Operation, 2d March. Discharged 29th March, cured. Strangulated inguinal hernia (extra-peritoneal operation).

CASE 3.—John H., æt. 9 months. Strangulated inguinal hernia. Operation, 3d April. Death, 10th April. Extra-peritoneal operation. Hernial symptoms quite relieved. Died of convulsions, from which he had previously suffered during dentition.

Perineoraphy.—Agnes F., æt. 36. Operation, 29th March. Death, 6th April. Secondary hæmorrhage, 5th April, stopped by liq. ferri perchlor., after which patient sank.

Trephine—Removal of Anterior Wall of Frontal Sinus.—Andrew C., æt. 21. Compound comminuted fracture of anterior wall, from a blow from the handle of a crane. Operation, 10th February. Discharged 18th April, cured.

Lithotomy.—Patrick H., æt. 5. Operation, 23d January. Discharged 15th March, cured.

Perineal Section.—Joseph G., æt. 36. Operation, 13th March. Discharged cured.

Operation for Old Perineal Fistulæ.—James J., æt. 30. Operation, 19th November. Discharged 3d January. Wound almost healed. Patient insisted on going home.

Holt's Operation for Stricture.—Andrew M'Q., æt. 27. Operation, 15th March. Discharged 12th April, cured.

Ligature of Hæmorrhoids.

CASE 1.—James B., æt. 52. Operation, 5th November. Discharged 11th December, cured.

CASE 2.—William R., æt. 34. Operation, 19th April. Discharged cured.

Removal of Enormous Mass of Vegetations from Anus—Removed by Thermo-Cautery.—James C., æt. 19. Operation, 17th December. Discharged 24th January, cured.

GENERAL REMARKS.—To judge of the causes which influence the success or mortality in any series of statistics, it is necessary to look carefully to the nature of the cases operated on, as well as to the methods of treatment, both local and general. This will be obvious when we find, as we not unfrequently do, that less severe operations are attended by fatal results, whilst graver operations under the same mode of treatment are successful, or operations apparently similar have different results. When, however, the individual cases are examined and compared, the causes of the different issue will, in most instances, not be difficult of explanation. The present series of statistics, especially when viewed in relation to those I have formerly published, will serve, I think, to establish the unfavourable effects of certain constitutional conditions as affecting the result, apart from the treatment adopted; and hence the importance of presenting an abridgment of the history of the individual cases of the series. If we take, for example, the

amputations, we find that out of thirty-four amputations there are six deaths. There is not a single death in the amputations through the thigh, shoulder, or leg, or what may be considered the greater amputations. Putting aside, for the present, the peculiar case of amputation at the hip-joint, the fatal results are found in what are usually considered the less formidable amputations—through the upper arm, forearm, ankle, and Hey's partial amputation of the foot. All the operations were performed by the same surgeon; the mode of dressing was the same in all. Why should the greater amputations do well, and some of the less formidable prove fatal? Or if we take the amputations of the upper extremity in the first series, out of three cases, including one at the shoulder-joint, there is no death. In the second series, out of four cases there are two deaths. Whence the difference? If we analyze the fatal cases, we find two performed for malignant disease; one through the upper arm, the other through the foot; both patients above middle age; the one patient depressed both by intense suffering and a presentiment of fatal result; the other of peculiarly excitable temperament, but the disease comparatively limited. These two cases are to me additional proofs of my past experience in amputation, that in malignant disease, more especially of the soft parts, the constitutional conditions present are those which swell the mortality of amputation.

In the primary amputation of the forearm we have the obviously unfavourable conditions of severe injury and loss of blood before admission, combined with long-continued habits of intemperance. Of the two fatal results after amputation at the ankle, that performed for disease should scarcely be considered as due to the operation. The stump had been quite healed for some time before the exacerbation of the mesenteric disease occurred which led to the death of the child.

In the case of secondary amputation for railway injury, the deceptive appearances led to delay in sending for me at the time. A low form of gangrene had attacked the deep-seated injured parts; and though these seemed at a distance from the ankle, the subsequent history of the case showed that septic influences were at work, which led to extension of the gangrene and the fatal issue. In all such cases I believe that it will be found safer to sacrifice a larger portion of the limb than run any risk.

I need hardly enter upon the causes of death in the amputation at the hip-joint, for it was an operation of last resort under desperate circumstances, the patient, who had long refused to submit to amputation under more favourable conditions, being anxious to have the operation done as a chance for life. Notwithstanding the enormously dilated veins, the precautions taken rendered the operation almost bloodless.

The antiseptic spray and dressings were used in this case at the special request of the friends, who had been led to suppose that

the operation would thereby be rendered quite safe! We can scarcely wonder at the credulity of these people when we recollect the strong statements which have been circulated guaranteeing success in cases of operation by the use of this special method. The case, from the nature of the disease, osteocephaloma, commencing in the interior of the shaft of the femur, and anatomically limited by the bone, was one which would probably have done well had the operation been performed under more favourable circumstances at an earlier period. At least, the results of two similar cases in which I have performed amputation at the hip-joint were perfectly successful.

The operations under the head of excisions of joints include some operations of much more severe and difficult nature than ordinary excisions, viz., the resection and excision of the lower articular end of the humerus, leaving the articular surfaces of the ulna and radius and the lower attachments of the triceps and brachii muscles undivided. One of the two fatal cases under this head was a case of this kind, where the limb had been ankylosed for ten years in an almost straight position. The ankylosis was so extensive, and so completely of dense osseous character, as to render the operation excessively difficult. In fact, the lower end of the humerus required to be cut from its attachments by chisel and mallet; and as the general oozing from the surface required to be arrested by slips of carbolized oil lint, the firm bandaging probably tended, in combination with the operation, to lead to the low form of gangrene which occurred. I have operated in similar cases of old-standing ankylosis by ordinary excision, by resecting and removing the whole ankylosed mass, without any bad consequences, and in such cases I should again have recourse to that operation; but in cases of more recent date, or where the ankylosis is partly osseous and partly fibrous, as in the case of Malcolm M., the operation of resecting and removing the lower articular end of the humerus, though more difficult than ordinary excision of elbow-joint, is not specially difficult or dangerous, and leaves a far more useful arm, as the natural muscular attachments are left entire. The other fatal result out of twenty-three excisions calls for no special remark. It was a case of excision of the hip in a very delicate boy who had also commencing phthisis. For some weeks he went on favourably; but as the wound healed the chest symptoms developed themselves, accompanied by diarrhoea, which exhausted him.

Of the nineteen operations on bones, including some extensive resections, besides the more ordinary operations for removal of large sequestra, there were no deaths, and all the cases had good results. Amongst these was a case of resection of the shaft and articular extremity of the ulna for acute osteitis, or acute necrosis, as it is sometimes termed, and an osteotomy in an old man for badly adjusted and partially united fracture of the

femur. This is a class of cases for which the advocates of the "antiseptic system" claim special success, and it is sometimes asked, Can those who do not adopt that system perform osteotomy with the same successful results? In the cases in this report no spray was used, and from the temperatures in the refracture by osteotomy it will be seen that it only once rose to 100° , and that some weeks after the operation, from irritation caused by the extension plasters.

There were forty-two cases of excision of tumours. Of these twelve were excisions of cancerous breasts, of which one died. This patient was a very fat woman with weak heart, and the breast removed was of enormous size from deposition of fat. The length of the incision was 13 inches. Slight erythema appeared the day after the operation. There was very little irritative fever, but she gradually sank, without much local disturbance. The erythema was of the erratic form and of purplish tint. Most of the other cases healed by first intention, except where the drainage-tubes were placed. There were two cases of large parotid tumours and some deep tumours of the neck—one a fibroid growth projecting from the posterior aspect of neck, near the junction of the spine and cranium, extending down for about 3 inches. This occurred in a young girl, and some points in the history—neuralgic pains, followed by numbness—led to suspicion of the spinal marrow being implicated. After careful observation of the patient and the tumour, I considered the symptoms depended upon local pressure; and as the growth felt movable, I removed it. It was much more deeply seated than I expected, partly overlapped by the edge of the trapezius, and completely covered by the splenius and complexus muscles; but after free division of these it was found perfectly encapsuled and defined, and removed without further dissection. I used a large drainage-tube to prevent the superficial wound healing until the deep cavity had contracted. The incisions healed rapidly, and the patient, who was kept for some time under observation, was gradually relieved of the neuralgic symptoms. In another case of cystic tumour the growth had so invaded the cellular interstices by mere pressure, and pushed aside the lower part of the parotid gland, that on its removal the external carotid and the origins of some of its higher branches—the facial and internal jugular vein, part of ninth nerve, and digastric and stylo-hyoid muscles—were displayed as in a dissection of the region. There was another similar case, but in it the growth had not niched itself so deeply. The fatal result after removal of a cervical tumour occurred in an old man of seventy-eight, who had a large fatty tumour about the size of a small melon projecting from the back of his neck. It was perfectly subcutaneous. He first consulted me in private, and I strongly advised him to leave it alone, as it was doing him no harm, and as I knew something of his habits. At first he acted on my advice;

but his friends told me he was determined to have it removed, and I consented, on condition that he would come into a private ward, where I could have control over his diet. He was a remarkably healthy-looking man. Even at his advanced age his hair was thick and dark-brown, with scarcely a gray hair, and his muscular powers and general appearance were more those of a man of fifty. The tumour was removed readily by a single long incision, and turned out without almost using the knife after the first incision. The wound healed very rapidly, and he was about to leave the hospital, when slight erythema appeared over the shoulder, away from the cicatrix, which it never much affected. Under the use of tincture of muriate of iron and other remedies the erythema passed off, and he was dressing to be prepared for his friends coming to take him home, when he fell down in a fit, became comatose, and gradually sank. I afterwards learned that some months previous to the operation he had had a similar attack, but had concealed it from me. I think the result of this case shows how unadvisable it is to perform even simple operations on old people where the disease does not endanger life.

The result in the case of removal of the large bronchocele was most disappointing, for although the growth was an exceptionally large one, extending up to the mastoid process on each side, and requiring division of the tracheal muscles to expose it, yet it was removed with wonderfully little loss of blood, and at first everything seemed going on favourably. Death occurred rather suddenly. The strength of the child had doubtless been impaired, so that the shock of such a serious operation proved too great a strain on her vital powers.¹ The fatal case of operation for a lipoma situated over the epigastrium, followed by suppression of urine, was probably due to embolism.

Amongst the most interesting of the cases of tumour was the hæmatocele cyst, which had existed for a great many years in the gluteal region. On dividing the gluteus maximus, so as to expose and remove the tumour, I found that it was prolonged into the ischio-rectal fossa, from which I dissected it. It was so thick that the tumour felt almost solid. Its cavity was lined with a membrane, and contained bloody serum and clot. It seemed to me to be a bursa which had undergone morbid changes, as it was precisely similar to a hæmatocele which I removed many years ago from over the patella of a female patient. The large pendulous myxomatous and fatty-looking tumour removed from the sacral region was also curious, and the result of the operation most gratifying; but as I have given an epitome of the case, I need not dwell on it further.

The general or miscellaneous operations—twenty-two in all—include operations for diseases of the genito-urinary and gastrointestinal systems—spina bifida, and one remarkable case of enor-

¹ Case reported in *Lancet*, 8th Dec. 1877.

mous warty vegetations, hæmorrhoids, etc. Of the operations performed on the genito-urinary system there were six cases of lithotomy by the lateral operation. Four were adults, and two boys. All of these cases were perfectly successful. In one case, a man of sixty-one years, some secondary hæmorrhage occurred on the eighth day, but not to any great extent. It was probably due to some excitement and consequent congestion of the parts. Many years ago I met with a case of very sudden and rapid arterial hæmorrhage, occurring in a young man on the third day, although there had been no bleeding of consequence during the operation. I felt the bladder hard and distended, and introduced a large gum catheter through the wound. This evacuated a great quantity of clear urine, and the alarming hæmorrhage stopped at once. The penis was semi-erect before the water was drawn off. It was pretty obvious that the swollen and congested state of parts after removal of the lithotomy tube had led to retention of urine, and that the straining of the patient had caused bleeding from the congested surface of the wound. Something like this might have excited the slighter hæmorrhage in the case in this report. In the statistical table there is a fatal case of perineal section. I think it is an error, owing to the case of Irvine W. having been wrongly entered under that title. He, no doubt, had had perineal section performed on him, but it was eighteen years previously. On the present occasion gradual dilatation was carried out after relieving the retention of urine, for which he was admitted. Then sub-acute orchitis occurred, and he ultimately sank from sheer debility and senile exhaustion.

The fatal results in the cases of operation for hernia are not difficult to account for. In all these that issue was due to the state of the patients rather than the operation. In cases of hernia, however unfavourable the condition of the patient, we must give what chance there is of relief; and the operation in all these three cases did afford relief, as evidenced by the action of the bowels. In the case of the young man with congenital hernia, all the hernial symptoms were completely relieved, and he ultimately died from the double pneumonia and extensive renal disease under which he had been suffering when the hernia came down. The same relief was afforded in the child's case. I had twice formerly reduced the rupture by taxis, but the child, nine months old, was subject to "convulsion fits" during dentition, and the hernia could not then be kept reduced. The operation afforded complete relief to the hernial symptoms, but the child died seven days afterwards in a convulsion. In the case of Anne D., peritonitis had supervened before admission. Indeed, the poor woman, attributing her symptoms to her condition of pregnancy, refrained from sending for a medical man for nearly three days. The question of the propriety of operating in such cases is not difficult to decide. It is the only chance of relief; and as to the risk, or rather certainty, of

abortion, that would equally have occurred from the intense pain she was suffering, and therefore I never hesitated as to the course of action. The cases of the very large umbilical hernia and the strangulated hernia in an infant show, by contrast, the usually successful results of early operation in strangulated hernia.

The unfortunate case of perineoraphy is the only instance in which I have met with a fatal result from that operation. The patient, a stout plethoric woman above middle life, had sustained rupture of the perineum into the rectum during parturition several years before admission. The operation was not attended with difficulty; there was scarcely any bleeding during the operation, and the secondary hæmorrhage was very trifling. The symptoms seemed due to blood-poisoning.

My thanks are due to Drs G. Brown, Chavasse, and Macdougall, who acted as my resident surgeons during the period included in the Report.

ARTICLE III.—*The Differential Diagnosis of Lead Encephalopathy and Intra-Cranial Tumours.* By BYROM BRAMWELL, M.D., late Physician and Pathologist to the Newcastle-on-Tyne Infirmary, late Joint Lecturer on Clinical Medicine and Pathology in the University of Durham College of Medicine, Newcastle-on-Tyne.

Cases of Plumbism Resembling Cases of Intra-Cranial Tumour.

IN some of the more severe cases of poisoning by lead the poison seems chiefly to affect the intra-cranial nerve-centres. When in Newcastle I had frequent opportunities of observing these cases. In that town there are large manufactories of white-lead, and the "lead-workers" were every now and again admitted to the Infirmary under my care.

The symptoms often commence suddenly, and are, severe headache, vomiting, and convulsions, the spasms being in some cases epileptiform, in others of the hystero-epileptic type. During the acute stage there is frequently a condition of mental aberration and excitement, in which the patient may be so violent as to require restraint. On ophthalmoscopic examination, double optic neuritis is found. The pupils are dilated, sluggish, and insensible to light. In some cases there is strabismus. In all the cases I have seen it was internal and double. The stage of mental excitement and convulsions may last for some weeks. The usual termination is in recovery, with more or less impairment of vision. Not unfrequently, however, the patient dies, having in some cases been comatose previous to death. The symptoms, more especially after the acute stage has passed away, very closely resemble the symptoms pro-

duced by an intra-cranial tumour. I shall first relate four cases, and then consider the differential diagnosis.

CASE I.—E. R., æt. 30, married, a “lead-worker,” was admitted to the Newcastle-on-Tyne Infirmary on 12th August 1875, suffering from headache and convulsions.

Previous History.—She has “worked in the lead” for five years, and has had ten previous attacks of plumbism, but no head symptoms. Her present illness commenced ten days ago with severe headache, vomiting, and convulsions.

Condition on Admission.—She was markedly anæmic. There was a well-marked blue line on the gums, decided wrist-drop, colic, and constipation. She frequently vomited, and complained of severe frontal headache, and of sharp shooting pains in the legs and thighs. There was a double internal squint; the ophthalmoscope showed intense double optic neuritis. Her mental condition was at times deranged, and she was on more than one occasion so violent as to require restraint (strait jacket). She was frequently seized with severe epileptiform convulsions, in which the muscles on both sides of the body were affected.

The *urine* was pale, sp. gr. 1015. It contained $\frac{1}{4}$ albumen, and deposited a heavy white flocculent precipitate, which, on microscopical examination, was found to consist of pus, squamous and tailed epithelium, and a few hyaline tube-casts.

Treatment.—The patient was well purged; cold was applied to the head; and iodide of potassium administered in full doses.

Result.—She continued much *in statu quo* until 1st September, when she was removed by her friends.

CASE II.—J. B., æt. 29, a lead-worker, was admitted on 15th October 1875, suffering from severe headache and convulsions.

Previous History.—He has worked in the white-lead for nine months, and has not had any previous attack. His present illness commenced three weeks ago with severe headache. This was followed by vomiting, convulsions, and double internal strabismus. He lay in a semi-comatose condition for several days. For the past ten days he has been improving. He served in the army for several years, contracted syphilis, and had a sunstroke while in India. He does not know why he was discharged from the army.

Condition on Admission.—He was anæmic. There was double internal strabismus, and a well-marked blue line on the gums. He complained of intense frontal headache. The pupils were moderately contracted, the left smaller than the right. Sight was dim; the ophthalmoscope showed intense double optic neuritis. The temperature and pulse were natural. The urine was quite normal.

Treatment.—Half a drachm of iodide of potassium three times daily. The bowels had been freely moved by sulphate of magnesia before admission.

Progress of the Case.—On 18th October he awoke at 7 A.M. and

complained of severe frontal headache. At 8 A.M. he took a fit. The spasms were epileptiform; both arms and both legs were convulsed. After the spasm passed off he became very violent, swore outrageously, and had to be restrained by means of a strait jacket. When seen by me at 12 noon he was quite unconscious, shouting out loudly and tossing himself about. The pulse and temperature could not be taken. The face was pale, the pupils of medium size, the left still smaller than the right. Half a drachm of chloral hydrate was administered per rectum, and was repeated in a few hours. At 10 P.M. he gave a loud cry, and took another convulsion. The chloral was repeated.

On 20th October he was *in statu quo*, at times wildly delirious, at others sleeping soundly. The pulse was 48, the temperature 98° F. Both eyes were turned upwards and to the right.

On 21st October he died, having been quiet and comatose for several hours.

The post-mortem examination was made twenty-four hours after death. There was nothing noteworthy in the external appearances. On removing the skull-cap the frontal bone was seen to be thickened, especially on the right side. There was a corresponding depression on the surface of the right hemisphere. The arachnoid and pia mater were thickened and opaque, and covered with a thin film of greenish lymph. These appearances were most marked over the convex surface of the hemispheres. There was nothing to lead one to suppose that the thickening of the frontal bone was in any way the cause of this condition. The cerebral convolutions were flattened; the sulci effaced; the brain substance was dry and tough; the membranes stripped off readily; the ventricles were not dilated. The contents of the encephalon weighed 57½ ounces. The other organs were quite normal.

CASE III.—M. M., æt 17, lead-worker, was admitted on 30th December 1875, complaining of loss of vision and headache.

Previous History.—She has worked in the lead for eighteen months. She was quite healthy until three months ago, when she was laid up for a few days with colic and headache. The present attack commenced three weeks ago with headache and vomiting. She was “out of her mind” for a week. When she came to herself she found that she had lost her eyesight. She has not, so far as she knows, had any fits.

Present Condition.—She is a healthy-looking girl, and is ruddy in the face. A faint blue line is seen on the gums; the tongue is coated; the bowels costive. She is quite blind, being just able to distinguish light from darkness with the left eye. The pupils are equal and dilated; there is intense double optic neuritis, with considerable deposits of lymph about the vessels. There is double internal strabismus. She complains of headache worse in the left temple than elsewhere, and also of a “rushing” sensation in the

left side of her head (as if wind were rushing through the head). Hearing, taste, and smell are natural. There is slight numbness in the fingers of the left hand. The nervous system is otherwise normal.

The *pulse* and *temperature* are normal.

The *urine* is scanty, very pale, sp. gr. 1002; it contains phosphates, but no albumen.

Treatment.—She was freely purged with sulphate of magnesia, and ten grains of iodide of potassium were given three times a day.

On 10th February she felt much better, was free from headache, could see tolerably well with the left eye, but not at all with the right. Five-drop doses of the tincture of nux vomica were prescribed, in addition to the iodide.

On 23d March she was made an out-patient. Sight in the left eye was good. She could count fingers with the right. I met her two years afterwards in the street. She had continued well since her discharge, and said that she could see quite well with both eyes. I had no opportunity of testing the vision, as she did not come to see me at the hospital, as she promised.

CASE IV.—M. C., æt. 18, a lead-worker, was admitted on 6th September 1876, complaining of pain in the head and loss of vision.

Previous History.—She enjoyed good health until three years ago, when she began to work in the lead. She has never been quite well since. Nine months after taking to this employment she was laid up with colic and vomiting. She has had several other attacks since. In 1875 she began to take fits, and was laid up with severe headache and vomiting. The fits commenced with a trembling; she then shouted, became unconscious, and was convulsed. After the third fit she "went out of her mind," and remained so for a month. When she regained consciousness she found her eyesight dim; it has continued so since.

Condition on Admission.—She is very pale. A faint blue line is still perceptible on the gums. There is double internal strabismus; the pupils are dilated and sluggish. Sight is almost *nil*; both discs are markedly white and atrophied. She frequently suffers from frontal headache, and often vomits. *Taste* and *smell* seem somewhat impaired; *hearing* is natural.

The *heart* is of normal size; a systolic murmur is audible at the apex. She is short of breath on exertion, but has always been so. The pulse numbers 84.

The *urine* is scanty, averaging 24 ounces in the twenty-four hours; it is very pale, sp. gr. 1015; it contains a trace of albumen, and deposits a copious sediment of pus, squamous and tailed epithelium. She is much troubled with leucorrhœa (the source of the pus, epithelium, and albumen in the urine). She has menstruated for the past few months, but for some time previously suffered from amenorrhœa.

Treatment.—Iodide of potassium and tincture of nux vomica, together with astringent injections for the leucorrhœa.

Progress of the Case.—Her general health improved considerably; the headache left her. Vision, as was expected, remained *in statu quo*. She was discharged on 8th November.

Differential Diagnosis of Encephalopathia Saturnia and Intra-Cranial Tumour.—Notwithstanding the fact that headache, vomiting, double optic neuritis, and convulsions may be the leading symptoms in both cases, the diagnosis is easily made by attending to the following particulars:—

1. *The Previous History.*—In the majority of cases of lead encephalopathy there is a history of previous attacks of plumbism, colic, constipation, etc. There are, however, exceptions to this rule (see Case I.).

2. *The Occupation of the Patient.*—These severe symptoms of lead-poisoning are only, so far as I know, seen in “lead-workers.” The more chronic forms of poisoning, such as occur in painters and in persons poisoned by drinking water impregnated with lead, do not seem to give rise to them.

3. *The Presence of the Characteristic Blue Line on the Gums.*—In all the cases I have met with the blue line was present, and must therefore be regarded as of great diagnostic value. In Case IV. the patient had not been exposed to the poison for fourteen months, and yet the blue line was still recognisable.

4. *The Presence of other Symptoms of Plumbism,* such as anæmia, colic, wrist-drop.

5. The character of the fits, when of the hystero-epileptic type, and the peculiar mental condition, are also of some importance.

The majority of cases of lead encephalopathy in this country occur in females. This is owing to the fact that in the English mills the most dangerous part of the work is done by women. In America, according to Dr Richardson,¹ the contrary is the case, and there men suffer most.

The exact mode of causation of the convulsions and of the optic neuritis in cases of lead encephalopathy are points of great interest, to the consideration of which I hope to return on some future occasion.

¹ *Boston Medical and Surgical Journal*, 1877, as quoted by Dr Hamilton in his work on diseases of the nervous system.

ARTICLE IV.—*Observations on some Points in Dextral Valvular Disease of the Heart, being a Graduation Thesis.* By ALEXANDER MORISON, M.D. Edin., of London.

(Continued from page 449.)

Experiment No. 3.—Water now injected into the coronaries of the divided heart showed that while the capacity of the ventricles was increased, as compared with that observed in systole, the transverse diameter of the walls themselves was also at the same time increased, thus representing a state of dilated hypertrophy.

To ascertain whether the diastolic ventricle exercised any absorptive influence towards itself, and to determine at the same time the comparative absorptive power of the two ventricles, and the influence on this power of turgescence of the coronary blood-vessels, I devised the following experiment:—

Experiment No. 4 (Figure 6).—A is a sheep's heart, with the left and right ventricles A' and A'', with glass-tubing *b'* tied into B, one of the pulmonary veins; C is the inferior cava, likewise having a glass-tube tied into it; D is a piece of india-rubber tubing which may connect either B or C with E, a graduated glass pipette passed through a cork into the central aperture of a three-necked jar F containing water G. H, K, and M are the pulmonary artery, aorta, and superior vena cava respectively. H and M may be ligatured at once, and K grasped in the first instance by the forefinger and thumb, so as to cut off the entrance of air into the ventricle during the first step of the experiment, which is as follows:—

If the left ventricle A' be compressed and then released from pressure, the chamber will resume its original form, and at the same time water will rise in the graduated pipette to the height of about 30 millimetres; with each compression this column will be depressed and again raised on expansion. If the pipette and tubing be then attached to C', and the right ventricle similarly manipulated, the column of water will rise, but less appreciably.

If we now perform Garrod's experiment, and fill the coronary arteries per aortam with water, and then ligature the aorta, we shall find that compression and relaxation of the left ventricle raises a column of water 120 millimetres high, while if the tubing and pipette be connected with the vena cava inferior, the absorptive power of the right heart is represented by a column of water measuring 30 millimetres, which, though much less than that of the left ventricle, is, under present circumstances, about the same as that resulting from diastole of the left ventricle in an uninjected state. If again the pipette be connected with the aorta and pulmonary artery, and the pulmonary veins and inferior cava ligatured, compression and expansion of the ventricular heart will raise a column of water in the pipette, but less appreciably than

under the circumstances already related, and always less in the pulmonary artery than in the aorta.

These experiments tend to prove—(1), that the fibro-muscular substance of the heart has, like all such structures, an inherent resiliency; (2), that this resiliency comes into play during the period of diastole; (3), that this diastole of resiliency has, *per se*, an influence, though comparatively slight, in absorbing fluid towards the ventricles—most powerful by way of the pulmonary veins, and to a less extent by way of the aorta, while the absorptive power of the right ventricular diastole is less evident than that of the left; (4), that such inherent resiliency is increased by injecting the coronary system, when water is raised much more powerfully than when fibro-muscular elasticity alone is active, proving alike the greater resiliency of the ventricular walls, and (as may be verified by section) a somewhat increased capacity of those chambers. As Dr Norman Cheevers long ago stated in vol. i. of the second series of *Guy's Hospital Reports*, “the coronary arteries have a close resemblance in the arrangement of their tissues to the large superficial veins of the extremities; they indeed appear to possess an intermediate gradation of structure between the vessels of the arterial and venous systems.” Such vessels, therefore, are incapable of maintaining a perfect and independent circulation in so active an organ as the heart, whose alternate dilatation and contraction must be regarded as the principal agents in the filling and emptying of the coronary vessels.

Their arterial supply is furnished during the heart's diastole, when blood forced into the aorta rebounds from the elasticity of that vessel upon the aortic segments; they are emptied by cardiac systole compressing the substance of the heart as one squeezes a sponge, assisted by cardiac diastole, which exercises a *vis-à-fronte* in the right heart, and a *vis-à-tergo* at the aortic sinuses of Valsalva, fresh blood entering the coronary arteries, and exercising a capillary pressure on the corresponding veins. If the foregoing statements are capable of proof, the entire sequence of events in the mechanism of the heart's action would be—(1), ventricular systole, with closure of the mitral and tricuspid valves, and opening of the aortic and pulmonary segments, blood the while rushing through the aortic and pulmonary orifices to fill the commencement of the aorta and the pulmonary artery; this coinciding with the apex beat, first sound, and carotid pulse; (2), inherent resiliency of the ventricular heart beginning to assert itself, and tending towards diastole, with partial closure of the aortic and pulmonary valves, and partial relaxation of the auriculo-ventricular valves, and probably the oozing of some blood by its own weight into the ventricles; these events taking place during the first silence and synchronous with the radial pulse; (3), elastic recovery of the aorta and pulmonary arteries from distension, with rebound of a column of blood on to the semi-lunar segments, completing the

closure of the latter, and producing the second sound; (4), turgescence of the coronary circulation completing diastole, which is favoured by the fibro-muscular resiliency of the ventricles; (5), opening of the auriculo-ventricular valves, allowing every facility for emptying the auricles by the gravity of the blood and the absorptive power of the ventricles, and supplying at the same time a *vis-à-tergo* and *vis-à-fronte* to empty the coronary veins, these events likewise coinciding as nearly as possible with the second sound; (6), commencing auricular systole under the absorptive influence of ventricular diastole; and (7), active auricular systole completing the ventricular repletion, and thus exciting the succeeding systole, and both occupying the period of the second silence. With reference to the latter event, I would suggest that although we have good reason to suppose that auricular systole is active in the production of the presystolic bruit, of mitral or tricuspid constriction, as regards the usually abrupt termination of that murmur, the first and softer portion of the bruit, while it is, as it were, gathering strength for its ultimate sharp definition, is a result of the absorptive power of the ventricle towards the completion of diastole, when the coronary turgescence and quadrupled resiliency of the organ suck, as it were, the blood through the constricted aperture.

The annexed modification of Professor W. T. Gairdner's well-known graphic representation of the sounds of the heart, copied from Dr Balfour's *Clinical Lectures on Diseases of the Heart and Aorta*, p. 37, will present the foregoing text more clearly to the eye. (Figure 4.) The barbed radii pointing to alphabetic characters correspond in regular sequence with the events detailed in the text under the consecutive numerals.

I have now endeavoured to prove that there is an absorptive force in the diastolic ventricle, and have likewise tried to indicate a rational mechanism for its production. As Dr Hayden has pointed out in the work already quoted, the diastole of the heart cannot be ascribed in any measure to the thoracic vacuum created by expiration, as this act only coincides with about one of four diastolic movements; and I would suggest further, that in the diastole of the left ventricle we have a counteracting force to the thoracic vacuum referred to. The tendency of the latter is to facilitate the flow of blood from the venous circulation into the lungs, but not to promote directly the entrance of aerated blood into the left heart. The absorptive power of the right ventricle is weak, to avoid causing collapse of the great venous trunks which enter the right auricle.

The absorptive power of the left ventricle, on the other hand, is great, to overcome the retentive power of the thoracic vacuum, which, together with the intervention of the left auricle, saves the pulmonary veins from collapsing under the influence of the powerful diastolic suction of this ventricle.

If the existence of such a power be granted, let us endeavour to determine—(1), what the consequences of its diminution would be upon the pulmonary circulation, and through the latter upon valvular disease of the right heart; and (2), the circumstances which tend to diminish it.

I shall briefly consider the latter first.

The circumstances capable of impairing this force are—(1), diminution of the cavity of the ventricle; (2), increase of the capacity of the ventricle, with loss of power in its walls, which implies valvular incompetency; (3), increased capacity without loss of muscular power; but with valvular incompetency.

The capacity of the ventricle may be diminished, either by hypertrophy naturally produced, which if unaccompanied by dilatation is usually concentric, or artificially by the improper use of drugs which are found useful in the removal or amelioration of conditions resulting from dilatation, and above all by digitalis. The more detailed discussion of the latter I shall reserve till I speak of treatment. It is scarcely necessary to insist at greater length, that the less the capacity of a suction apparatus, or in other words, the smaller the vacuum producible by such an apparatus, the less its absorptive power, but to be convinced of this fact the following experiment may be performed:—

Experiment No. 5 (Figure 7).—A is a three-necked jar containing water, into the central neck of which a pipette is passed, through a cork; the jar is graduated with a millimetre and centimetre scale; *b* is a piece of indiarubber tubing, the calibre of which is about 5 millimetres, and its length (including 21 centimetres of glass tubing, *c*) 135 centimetres; *d* is a syringe (*a*) of $2\frac{1}{2}$ -ounces (*β*) of 1 ounce capacity. The syringe is held at a higher level than the jar, and slowly exhausted. Exhaustion of the $2\frac{1}{2}$ -ounce syringe caused the water to fall 1 centimetre in the jar, and to traverse the whole length of the tubing and pass into the syringe, while the 1-ounce syringe only depressed the level of the water in the jar 3 millimetres, and the portion withdrawn only traversed 110 centimetres of tubing, its highest point being within 8 centimetres of the upper end of the glass tubing C.¹

Hence, we may conclude a diminished capacity of the left ventricle, notwithstanding an increase in its muscular power, will likewise lessen its power of absorption, and from this cause, as well as from the passage of a smaller quantity of blood into the chamber during diastole, pulmonary engorgement is favoured, and the propulsive power of the right ventricle hampered. It may be argued that such untoward consequences of a diminished capacity of the left ventricle would be obviated by its more frequent and more powerful action, and where we have to deal with an otherwise healthy heart this is probably the case;

¹ Caoutchouc bags are useless for this experiment, as they cannot resist the atmospheric pressure, and when vacuous collapse.

Fig. 8.

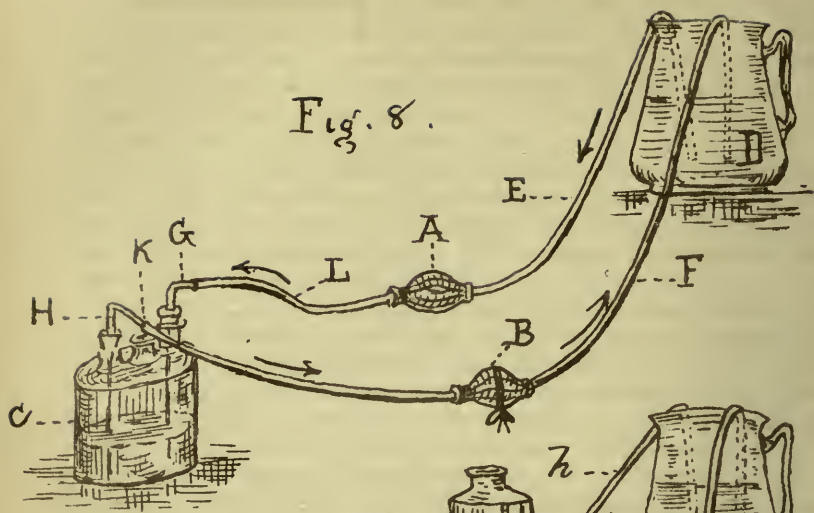


Fig. 9.

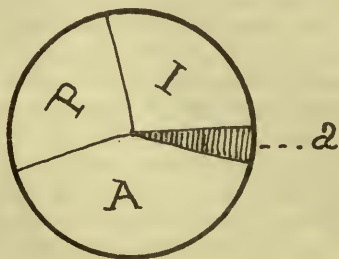
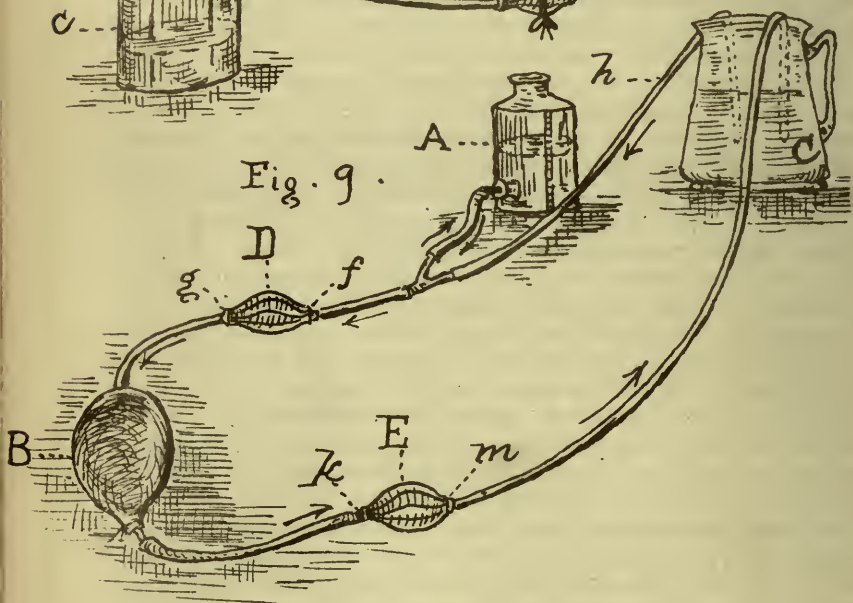


Fig. 10.

but if we have an imperfect right heart and retarded venous circulation, and it is with such cases we are at present concerned, matters are altered. Here the consequences of an energetic and frequent action of the left ventricle would (on account of the imperfect action of the corresponding chamber on the right) tend to fill the coronary circulation more rapidly than it could be emptied, causing an engorgement, having in its train, as we shall afterwards see, gradual dilatation and valvular incompetency of the left ventricle, with an aggravation of the deficiencies in the right heart. When, on the other hand, the capacity of the left ventricle is increased and the power of its walls diminished, that is to say, when it is dilated and its walls degenerated, we cannot have perfect valvular action, especially at the auriculo-ventricular orifice. We can, therefore, easily understand the baneful consequences of an imperfectly emptied auricle, with its consequent dilatation and pulmonary congestion, or at least impediment; and it cannot surprise us, that the deficient chambers in the right side of the heart, even when hypertrophied, and assisted by the upward pressure of the venous column, fail to surmount such a barrier in the circulation. As regards the third cause of impairment of the absorptive power of the left ventricle, viz., the increase of its capacity *without* loss of muscular power, there is no doubt that such cases of eccentric hypertrophy (or hypertrophy with dilatation) frequently occur, but there is as little doubt that such cases are usually the result of retrograde changes in a heart in which hypertrophy at an early period probably preponderated over dilatation. If such a condition is compatible with perfect valvular action at the aortic and mitral orifices, the absorptive power of the ventricle would be increased, and instead of being detrimental when we have valvular deficiency in the right heart, the logical inference from the preceding argument is, that it would be positively beneficial. But, unfortunately, such a period, if it ever exists *in the cases we have to do with*, would be but transitory, and would soon give place to imperfect valvular action, with dilatation of the auricle, and its sequelæ already mentioned. To illustrate these points more fully, the following experiments may be performed with the simple apparatus described (Figure 8).

A is an ordinary "Higginson's syringe," representing the right ventricle, connected at one end by means of indiarubber tubing with a glass tube G bent at a right angle, which represents the pulmonary artery and its branches, and at the other also by means of rubber tubing with the jar D, where the systemic venous and arterial systems unite. C is a three-necked jar containing water, in which the central neck, K, and the air within the jar, represent the trachea and bronchi, while the water, W, represents the pulmonary circulation. The bent tube, G, passed through a cork in one of the necks represents the pulmonary artery, while a similar tube, H, issuing from the other neck, represents the pulmonary veins;

B, also a "Higginson's syringe," is the left ventricle connected by tubing with H on the one hand and D on the other. D is a jar containing water representing the systemic capillaries, and the source of supply for the water intended to circulate through E, A, L, the venous, W the pulmonary, and M, B, F, the arterial circulation.

If B be either tied so as to prevent full expansion, or if it be prevented from expanding fully by compression with the fingers, when it is worked so as to imitate systole and diastole, water entering C, either by syphonic force alone or by this in addition to the influence of A worked in like manner to imitate systole and diastole of the right ventricle, accumulates in the jar C more rapidly, tending to fill it, than if B be either unbound, so as to expand fully by its elasticity before being squeezed in systole, or than if it be not prevented by compression with the fingers from expanding to its full extent. Moreover, diastole of the ventricle B, that is expansion of the bag after compression, withdraws water from C. With this apparatus the vascular phenomena of asphyxia may also be demonstrated, by corking the neck K (trachea) after the circuit has been established. Water will then accumulate in the jar and that portion of the tubing representing the venous circulation, while that representing the arterial section will remain comparatively empty.

After having devised this apparatus, my attention was directed to a scheme of the circulation, described by Professor Rutherford (now of Edinburgh) in the *Lancet* for 17th February 1872. In that scheme the heart is represented by a single auricle and ventricle, and the capillaries by indiarubber bags filled with sponge. In the following experiments I have represented the pulmonary circulation by an ox's bladder, and mention Prof. Rutherford's apparatus, as it was from the bag-shaped capillaries that I borrowed the idea of the bladder.

Experiment No. 7 (Figure 9).—A is a graduated bottle, having two necks, one of which is at its base; to the latter is attached a piece of rubber tubing connecting it with *h*. The bottle is placed behind the right ventricle D, to mark the amount and degree of venous stagnation or regurgitation. *f* and *g* are the tricuspid and pulmonary valves respectively. B is the bladder, which when filled with water represents the pulmonary circulation. E is the left ventricle, and *k* and *m* the mitral and aortic valves respectively, while C is like D, in the last diagram, the systemic capillaries, and the source of the circulating fluid. To establish the syphonic circulation throughout the apparatus, A must at first be corked. When B is tense, water in A remains stagnant; when the tension in B is relieved by the action of E, water falls in A; the more perfectly E acts, the more quickly the level of the water in A subsides.

If the ball valve *g*, in the syringe D, representing the pulmonary

valves, be removed, B can be emptied more quickly by the action of the perfect left ventricle E, than it can be filled by the maimed right ventricle D, owing to regurgitation into the latter on diastole or expansion, and the consequent withdrawal of part of the water thrown into B, and likewise, because this regurgitation prevents a certain amount of water from behind (the venous circulation) entering D. E has this advantage even when the syphonic action from C is in favour of D. The larger the quantity of water that enters E, and the more perfectly it contracts (that is the greater the capacity and power of the left ventricle), the more apparent is this advantage over D. If the ball valve *f* of the syringe D, representing the tricuspid valve, be removed, and E acts normally, B is emptied by E more quickly than it is filled by D, while under these circumstances regurgitation is very evident in A; and if the syphonic current *h* be interrupted with this arrangement, while B is tense (the pulmonary capillaries engorged), water flows back into A more abundantly and rapidly than when the valve *g* (pulmonary) alone is deficient under similar circumstances. (A was purposely placed in these experiments at a higher level than B; as otherwise, when the syphon *h* is interrupted another is established from B to A.) By relieving the tension in B, water in A again falls, both when D and E act simultaneously, and when either of them acts alone.

If the valves *g* and *f* (pulmonary and tricuspid) are both removed from D, while E acts normally, B is emptied more effectually than under any other condition of D, while regurgitation in A is even more apparent than when *f* alone is absent. But, though the impulse of the regurgitation into A is more evident, there is no greater accumulation there than when the ball representing the tricuspid valve is deficient. If, on the other hand, the ball K in the syringe E, representing the mitral valve, be removed, while both valves are absent in D, B is filled more quickly per D than it can be emptied per E, owing to regurgitation from E into B (that is from the left auricle into the pulmonary veins and their radicles); but if M, representing the aortic valve in E, be removed while K is perfect, and both valves are absent in D, B can be emptied more quickly per E than it can be filled per D, but less quickly than when both valves in E (*k* and *m*) are perfect.

Both valves in D were removed in the latter experiments as representing most nearly the conditions in the case which actually came under my own notice, and the most crippled state of the right ventricle, and therefore affording the best test of the utility of the left.

DURATION OF THE DISEASE.

A consideration of the length of time for which patients suffering from diseases of the class we are treating of survived, and the

degree of embarrassment of the pulmonary and systemic circulation, will throw some light on the comparative efficiency of the compensatory measures adopted by nature in the different cases. We can only estimate the duration of the disease approximately, and in two cases (Ormerod's and Kinglake's) the correctness of even the approximate calculation is a matter of doubt; in the others, however, we are probably near enough the truth for practical purposes. Estimating the duration of the disease in the cases generally, and as accurately as circumstances will allow us, we may consider (as the tables will show) that in three it lasted between two and three years; in one, between three and four years; in one, between five and six years; in one, between six and seven years; in one, between ten and eleven years; in one (my case) between twelve and thirteen years at least, and possibly in a minor degree from birth, *i.e.*, for twenty years; in one (Begbie's), it was congenital; and in two, the duration of the disease is not stated, but in one of these (Paget's) it had probably existed for some years if we may judge by the character of the valvular disease, and in the other (Bertin's second case) it had probably a congenital origin.

The analytic table further indicates that where the duration of the disease was greatest the degree of embarrassment in the pulmonary and systemic circulation was least. The only exception to this rule is the case recorded by Dr Wilks, but death in this instance was attributed to disease of the lungs, and not of the heart, and the condition of the latter organ shows that life would probably have been prolonged for a considerably longer period but for the intercurrent affection. Moreover, it is to be noted that, with one exception, where the circulatory embarrassment was moderate, the left chambers of the heart escaped hypertrophy, and vice versa, where such a condition was great, those chambers had undergone accessory development, also with one exception. (I do not here take into consideration the cases marked with an interrogative sign.) The exception in the former instance is Dr Foster's case, and in the latter, Bertin's second case. In Bertin's case, however, the published account of the state of the circulation only applies to the short period during which he was under Bertin's observation, and we may conclude that as the disease was probably congenital, and the patient's occupation that of a stone-mason, his circulatory embarrassment must have been comparatively slight for a considerable period. I have already more particularly discussed at pages 520 and 521 the question of the comparative influence on the circulation of the different forms of valvular lesion, and need not again enter into this subject.

These facts corroborate the probable correctness of the opinion, that left-ventricular hypertrophy in most instances aggravates the difficulties of a circulation disordered by valvular disease in the right side of the heart, and that this condition, if in the first instance a

consequence of great impediment in the circulation, is in its turn a cause of still greater embarrassment, and not, as one might expect, a beneficial compensation for such obstruction.

Before summarizing the positions laid down and the points maintained in the foregoing observations, now that I have discussed as fully as it is my intention to do, the conditions and consequences of organic valvular disease in the right heart, I shall offer a few remarks upon the subject of functional valvular incompetency, especially of the tricuspid valve, and particularly on that form of incompetency, due to an obstructed pulmonary circulation, resulting from lung disease, and independent of obstructive or regurgitant lesions of the mitral or aortic valves.

(To be continued.)

ARTICLE V.—*Note on the Excretion of Urea.* By JOHN HADDON, M.A., M.D.

THE secretions and excretions of the body must, if properly interrogated, be capable of giving information as to how the functions of the various organs of the body are being carried on. But, that we may be able to gain much information from such interrogation, we must first know the function of each organ, as well as the normal condition and action of its secretion and excretion.

It is common to look at the fæces during some diseases, and we think we gain information by so doing; but ideas vary much as to the normal colour of fæces in health, and no attempt has been made, so far as I know, to examine minutely the fæces in disease.

The importance of the examination of the urine in disease is admitted by all; but I believe it is more common to examine it for abnormal ingredients than to inquire into the relative amounts of its normal constituents.

In the winter of 1878 I began to estimate, by Dupre's process, the amount of urea in the urine of some of my patients.

Physiologists are at variance as to the organ in which the urea is formed; and although I did not hope to be able to settle the question by examining the urine in disease, still I thought some facts might be ascertained which might warrant an inference.

One of the first cases whose urine I examined was that of a man convalescing from an attack of, probably, typhoid fever. He passed twenty-four grammes of urea in twenty-four hours.

The next was that of a young man in whom I suspected incipient cirrhosis of the liver. He passed twenty-two grammes of urea in twenty-four hours.

The next was that of a lady suffering from rheumatic pains in the shoulders, knees, and ankles, with swelling of the joints of the

hands and feet, without any pyrexia. She passed 2·6 grammes of urea in twelve hours from night to morning.

The next was that of a woman who drank more stimulants than she ought, and suffered from œdema of the legs, with an eczematous state of the skin over the shins. She passed 1010 c.c. of urine, specific gravity 1008, without albumen, and containing 7 grammes of urea, in the twenty-four hours.

There was so much variation between the cases that I determined to observe my own urea excretion, which I did during the whole month of December 1878. During that time I noted my diet, but did not measure the quantity. I noted the amount of exercise I had, and the state of my health as judged by my feelings. The following are some of the results I found:—

Maximum.	Minimum.	Average.
1. Urea, 27 grammes.	13·5 grammes.	18·5 grammes.
Urine, 1610 c.c.	680 c.c.	980 c.c.
Sp. G., 1031.	1017.	1024.

2. Having made a diagram of the urea, urine, and specific gravity, I found that, roughly speaking, the amount of urine and urea varied directly, while those varied inversely as the specific gravity.

3. I could not notice any effect upon the urea by variations in my diet.

4. I never had exercise to fatigue me, and did not notice any variation in the urea with the varying amounts of exercise.

5. As to my bodily feelings. When the urea was most abundant I was buoyant and well. When it was low I felt languid and out of sorts. I was much struck by that fact. Did I feel well because I passed much urea? or did I pass much urea because I was so well? What organ was it whose action so regulated my feelings?

6. The curve of the urea began low, rose gradually till it reached its highest point on the 8th, fell gradually till it reached its lowest point on the 16th, rose again till it reached the top of the next curve on the 24th, and then fell, remaining about the average at the end of the month.

7. Considering the character of the curve in my case, the average could not have been ascertained by observations extending over less than ten days. The general practitioner does not need to be told of the difficulty he would have in trying to estimate the urea for ten days, with anything like a chance of accuracy. It is practically impossible; and as single observations are useless, and even several consecutive observations not to be relied upon, to establish the average urea excretion of any individual, it is evident that if any information as to the organ, or tissue where urea is formed, is to be gathered from pathological observations, such observations must be undertaken in hospitals.

ARTICLE VI.—*Practical Observations on some of the more Common Diseases of Early Life.* By CHARLES BELL, M.D., Lecturer on Midwifery and the Diseases of Women and Children, Fellow of the Royal College of Physicians, Edinburgh, etc.

(Continued from page 220.)

CONVULSIONS.

ACCORDING to the return made by Dr Clarke in 1792, this was the most common and fatal of the diseases of childhood; and Mr North,¹ in his work on "Convulsions," states that it is even more frequently met with in warm climates than in this country in children advanced in years than in very young infants. Out of 17,650 children born in the Dublin Hospital previous to 1792, one-sixth died, and of these 19 out of 20 fell a sacrifice to convulsions. This disease seems to be limited to no climate or country, as Brashel² states that it is common in every region of the world—"Sous tous les latitudes, sous la zone brûlante des tropiques, comme sous la zone glacée du Spitzberg." This author considered that when convulsions were the result of external and mechanical causes they were less severe, unless some important organ was injured, in which case the original injury was the source of danger; but North, judging from his own experience, opposed this opinion.

Underwood divided convulsions into two kinds, viz., the idiopathic and the sympathetic. At the same time he admits that the distinction is not accurate. He treats the idiopathic form very superficially, while he dwells at considerable length on the sympathetic, which he considers is produced more frequently by teething and bad food than by any other cause. In support of this opinion he refers particularly to a case related by Zimmerman, in which the fits entirely disappeared on changing the diet. The younger the child, the more likely it is to be affected by improper food. But this is not always the case, as Underwood refers to another case in which the mother's milk was influenced by a sudden fright. A lady who was staying with her suddenly dropped down dead. The shock she felt so alarmed her baby that it cried bitterly, which induced her to apply it to her breast. In the course of an hour after it was seized with a fit, and lay comatose for six-and-thirty hours.

Convulsions have been more recently distinguished into tonic and clonic, according to the character of the spasms attending them. When the muscles are permanently contracted, it is called the tonic form; and when the contractions are alternating with complete relaxation, the succession being rapid, it is called the clonic. The parts which are most frequently affected during con-

¹ Page 127.

² *Sur les Convulsion*: Paris, 1828.

vulsions are the eyes, the upper and lower extremities, and the muscles of respiration. Sometimes only one side is affected, but this is no indication of a milder form of the disease. Mr North refers to the case of a child of eighteen months, which lost the powers of speech and of hearing, but retained her vivacity and general good health until she was sixteen years old, when, after the noise and excitement of a public rejoicing, she suddenly recovered her hearing, and soon after her speech. It has been supposed by some authors that convulsions seldom come on during the night, because children are less exposed to the exciting cause; but this is an erroneous opinion, which is certainly not borne out by observation, as in many instances fits are found to come on during sleep, and the most common cause of fits being over-feeding, it is as likely to act injuriously during the night as at any other time, especially if the child is artificially fed, in which case the nurse, in order to save herself trouble, is too apt to over-feed the child on going to bed. In reference to over-feeding, Underwood mentions some melancholy cases of fine-looking children being suddenly cut off, after the nurse had boasted that she had just given them "three boats full of victuals." It is supposed that male children are more liable to fits than females, especially in Germany, but this does not correspond with the experience of Dr Coley, although Churchill¹ seems to support the opinion; and in corroboration of his views he quotes the report of M. Rilliet and Barthez in regard to twenty-five cases, of which fifteen were in boys and ten in girls. Climate seems to have little effect in producing fits, although Dr Hillary states that in Barbadoes the children are so excitable that the slightest noise will sometimes bring on convulsions.

According to Churchill² convulsions may be hereditary as well as congenital; and, in support of this opinion, he refers to Boerhaave's case of a man subject to epilepsy, all of whose children died of the same disease; also to the case related by Lorry of a family of which the father, mother, and children were seized with convulsions from the slightest causes; also to Bouchut, who relates the case of a family of ten children, all of which had convulsions: one of them married and had ten children, nine of which had convulsions, and six died. He asserts that if a woman gets a severe shock during pregnancy, her child is liable to have fits soon after birth; yet it is very remarkable that children born during the convulsions of the mother are not liable to have fits.

The idiopathic convulsions are in general the most fatal form of the disease. Much depends, however, on the extent and severity of the cerebral affection and the violence of the spasms; yet North doubts the existence of this form of convulsions, and he asserts that it is always a sympathetic disease, and that it is more common in the present day than formerly, in consequence, he

¹ *Op. cit.*, p. 258.

² *Op. cit.* p. 118.

believes, of the pernicious custom of too early education, and he supports this opinion by the fact that convulsions were scarcely known in Europe in former times. This opinion might be tenable did convulsions not come on until education had commenced, but experience proves that they appear in very early life. It is true, however, that convulsions were much less common in former times, which may be explained by the people living a more simple and natural life, which led to the children being longer nursed, and therefore more robust.

Cause.—The most common exciting causes are improper food, the retention of the meconium, impure air, teething, worms, the disappearance of some long-continued discharge, excessive shame, anger, frights—an example of which is related by North, in which fatal convulsions came on in consequence of a nurse having threatened to throw a child out of the window. In more advanced children they may be induced by too long lessons or other means of excitement. They are also the frequent forerunner of some eruptive disease, such as measles, scarlet fever, and smallpox. Hydrocephalus is a common cause, as well as external injuries.

Symptoms.—The premonitory symptoms are—suffusion of the eyes, squinting; the breathing becomes slow and irregular, sometimes convulsive; the thumbs are bent into the palm of the hands, which is a very unsatisfactory circumstance, even in naturally robust-looking children. These symptoms may be of longer duration, and they may even pass off with a regular attack, but they are more likely to be followed by regular convulsions. In some cases, when they arise from some cerebral affection, one side is more convulsed than the other, one foot or one arm being retracted and violently thrust out again, while the limbs of the opposite side seem palsied or spasmodically retracted. On other occasions both sides are equally affected, the head being thrown back, the shoulders elevated, and the eyes turned up, and the pupils dilated, producing a most ghastly expression.

Treatment.—The first object in the treatment of convulsions is to allay the spasm, and to restore consciousness. This is generally effected by means of a hot bath, and at the same time applying some pungent substance to the nose, such as ammonia. Should these not be effectual in restoring sensibility and overcoming the convulsions, we must have recourse to the application of chloroform. Having overcome the convulsions, we should then endeavour to remove the cause, which is most commonly something irritating the alimentary canal. If the child has recently taken a full meal, an emetic ought to be given as soon as the patient is able to swallow, and the best kind under the circumstances is a full dose of ipecacuan according to the age of the child. If the bowels are constipated, an aperient should be given, either of calomel or castor-oil; but as it is important that the bowels should be moved quickly, an enema or a suppository should be

administered without delay. Cold should be frequently applied to the head if there is much heat, while the feet are kept in warm water, or mustard poultices should be applied to the calves of the legs. If there is much excitement in the circulation, leeches may be applied with advantage, although M. North¹ prefers venesection or cupping, as he says that he has never seen a well-marked case of congestion removed by leeches. But the use of the lancet or cupping-glasses is very questionable in young children, from the certainty of producing crying, which inevitably increases the congestion. Some authors have advised the use of opium and blisters, but such remedies are extremely hazardous in very young children. If the child is teething, and the gums seem red and swollen, they ought to be scarified. If there is reason to suspect that worms are the cause, turpentine should be given in milk, or it may be given in the form of an enema.

After the attack is over, the bowels should be kept regular by mild aperients, and the most useful are moderate doses of rhubarb and potash, which, besides regulating the bowels, will act as a diuretic. Change of air and the use of small doses of chalybeates, along with light and nourishing food, will be very beneficial.

Prognosis.—When the fits are moderate and of short duration, and the natural cheerfulness and lively expression of countenance soon returns, the case may be considered extremely satisfactory; but if the convulsions are long-continued or of frequent occurrence, and the child continues to be dull and heavy, with an anxious expression of countenance, there is reason to apprehend great danger.

TRISMUS NEONATORUM, OR NINE FITS.

This disease is of extremely rare occurrence in this country at the present day, although previous to the improvements carried into effect by Dr Clarke it was very common in the Dublin Hospital.² Dr West, in the course of his extensive experience, states that he met with only four cases. It is, however, of very common occurrence in America and the West Indies, and, according to Dr Wootton, it appears with fearful frequency among the Negro children in Alabama, and is more fatal than any other disease; yet he never met with a case in a white child. M. Bajou states that it is met with on the coast of Cayenne, and it seems to be produced by exposure to the cold sea air, as it is unknown in the interior of the country, thus bearing out the opinion of Sauvage, expressed in the following passage: "*Hic morbus hieme et cum aura humida advenit saepius quam sicca æstate.*"³ It is very fatal in St Kilda, and it is said to destroy 64 per cent. of the children between the fifth and twelfth day after birth in Westmannœ, a

¹ *Op. cit.*, p. 155.

² Tanner's *Diseases of Infants*, p. 267.

³ Churchill, p. 91.

small island off the coast of Ireland. Dr Churchill considers that it is peculiar to warm climates and to vitiated localities.

Symptoms.—It makes its appearance, in general, within the first week after birth, sometimes within twelve hours. In some instances it is slow in its progress at first, and then it runs a rapid course to a fatal termination. The first indication of its attack is a peculiar whimpering cry of the child, which shows a remarkable greediness for food, but this is soon followed by an obvious aversion to such, and on examination the under jaw is found to be spasmodically fixed. This may be soon followed by general convulsions, but in other cases these take the precedence. In some cases the attack is ushered in with a scream, which is soon followed by difficulty of breathing, livid countenance, clenched hands, the feet flexed on the ankles, the toes bent backwards, and the trunk curved as in opisthotonos, the mouth open, and the jaw fixed. When the fit is over the muscles gradually relax, and the child lies with its hands clenched, the thumbs bent into the palms; the legs crossed, and the large toes separated from the others; the lips are compressed, and the power of sucking is entirely gone, although the child can still swallow; but this soon ceases, and fatal convulsions come on, or the child dies comatosed. The disease seldom lasts more than six-and-thirty hours, and sometimes not more than twenty-four.

Cause.—The most obvious causes of this disease are the sudden change of temperature towards night, and damp in warm climates, and in milder climates impure air¹ and unwholesome food.

Morbid Appearance on Dissection.—In all the cases blood was found effused into the cellular tissue surrounding the theca of the spinal cord, along with which there was a congested state of the spinal arachnoid, and in some there was effusion of bloody serum into the cavity, and there was occasionally congestion of the brain. According to Wooton there is peritonitis, and that portion which surrounds the navel is gangrenous; there is congestion of the liver as well as of the base of the brain and cervical portion of the spinal cord—which fully accounts for the great cerebro-spinal irritation observed during life.

Treatment.—Although cleanness and good ventilation have the effect of warding off the disease, yet once it gets into a hospital no treatment has hitherto had the effect of curing it. Dr West recommends the application of leeches and the warm bath, but he has never observed any advantage from the use of calomel or antispasmodics or tobacco.² As in other kinds of fits, chloroform may prove of use in allaying the spasm, after which pure air and nourishing diet, with mild aperients, may be beneficial.

(To be continued.)

¹ Churchill, *op. cit.*, p. 91.

² *Diseases of Children*, p. 177; also Colin, *Midwifery*.

ARTICLE VII.—*Rotten Teeth: A Rhapsody with a Remedy.*

By EDWARD GARRAWAY, M.R.C.S.

NOT the least valuable among modern arts is the art of mechanical dentistry—a development of the necessity of the age in which we live, for it does not appear in the centuries past that the construction and fitting of artificial teeth was practised, nor, so far as our investigations go, required. Certain it is that at no period in the history of the human race has the decay and destruction of these organs gone on so rapidly as during the present generation. Not in age nor in middle life only, but even amongst the young, the display of a fair set of teeth is too often due not to “nature’s art divine,” but to the skilled handicraft of the dentist. From what cause this early decay arises, and how far it is remediable, are considerations of no light import, so far as the future health, strength, and happiness of our descendants are concerned.

Mr Skaife, of the Blackburn Infirmary, who has for many years been intimately associated with the diseases of factory operatives, in an address delivered at the annual meeting of the Lancashire and Cheshire branch of the British Medical Association, says:—“I notice this decay of teeth very closely, and I am considerably within the mark when I say that there would not be one case of entire teeth to two hundred cases in which the teeth were more or less destroyed.” Our leading dentists would no doubt afford similar testimony amongst the so-called “upper classes.”

Mr Skaife, not without some show of reason, considers that a dietary in which milk is almost entirely wanting contributes largely to the destruction of the dental structures, tea having for many years been substituted for the milk of bygone days. Doubtless no other article of food contains so much of the phosphates, and its importance in the formation of the bony skeleton is universally recognised. A lady unable to suckle her infants has brought up five children upon various patent foods with very hard names and very long prices; every child in succession has become bow-legged as soon as it was able to walk. After her last accouchement she was persuaded to rear baby number six upon milk, and milk only—of course properly diluted—the result being that this little girl possesses the only handsome pair of legs in the family. Now, if decayed teeth amongst the Blackburn operatives resulted from defective milk-supply, much more should rachitis and mollities ossium in their various forms be prevalent; but of them Mr Skaife makes no mention whatever, although he speaks feelingly of the ravages of scrofula.

Although we are taught to believe that a constitutional cause—defective general health, whatever that may imply—is the *fons et origo* of the malady under discussion, yet this is hardly to be

reconciled with the fact that carious teeth are frequent amongst people otherwise perfectly healthy, vigorous, and robust, who have never encountered grave illness nor been subjected to medical treatment, nor in whom there is ground for suspicion of a syphilitic heritage. Surely some local cause must be in operation. The chemical action of food is untenable, because all the teeth are alike subjected to this influence, and would all equally succumb at every part of their exposed surface, whereas only one or two at a time fail, and that at a minute point only to begin with.

Local violence may account for a little, just as a blow upon the tibia or the olecranon may occasion the death and exfoliation of a circumscribed portion of bone. Stony plum-puddings and negligent cooks, doubtless, have something to answer for.

But vicissitudes of temperature probably contribute more largely than chemical decomposition or accident. When we consider the variety of aliment introduced into the cavity of the mouth at a fashionable dinner-table, from the soup, a little below boiling-point, to the "grand Lumpoff Icywitz Nesselrode pudding" at 32° Fahrenheit—when we consider these rapid transitions from hot to cold, it is not surprising that a material of so low organization as the enamel of the teeth should frequently perish under such an ordeal. The very air, too, which we breathe, ever varying in temperature as we move from room to room or place to place, has its influence,—an influence, too, from which the teeth ought to be, and but for our overwrought civilization would be, protected. The secretion from the salivary glands also, one of whose functions is to keep perpetually lubricated the gums and teeth, is rendered unavailing, from the unfortunate and unseemly habit of maintaining the mouth open, generally through the hours of sleep as well as during the greater part of the day. The natural channel of respiration is the nares. "He breathed into his *nostrils* the breath of life;" and as you go backward and still backward in the scale of humanity—pass over the American continent, penetrate the border regions where civilization has planted her vices, and strike deeper and still deeper into the savage wilderness where the foot of a European may be has never trod—and what do you see? You light upon wild, yet noble tribes withal, who literally never open their mouths but to eat and to speak. These people know not disease; they may scarcely be said to die; their young men may perish on the battlefield or in the chase, and their old men do ultimately leave off to live, but death, as we encounter it, with its dread accompaniments of pain and sickness, they know not of. Here we find teeth in the highest state of perfection, and which seldom or never decay. The civilization of which we boast—education—intellectual development—are not unalloyed blessings. As our reasoning powers increase, so our natural instincts, specially those of self-preservation, decrease. Dwelling ever in a state of perfect and assured security, our faculties, whether of sight, hearing,

scent, or touch, have become blunted, and are not nearly so acute as those of the untutored savage. The very muscles which move the external ear, from long disuse, are now no longer competent to their appointed functions. Neither we nor our forefathers have ever had to catch the distant sound of an approaching foe, and the movements of the pinna are consequently lost. But how the dropped jaw, the more or less perpetual relaxation of pterygoid, masseter, and temporal muscles has come about is not easy to explain, unless it be attributable, again, to the sense of security in which we dwell. Amongst cultivated nations man's instinct of self-protection, of self-preservation, is so rarely excited that he goes through life, as it were, unbraced, and it is only when called upon for some great mental or physical effort that he sets his teeth and compresses his lips to obtain the necessary degree of firmness, which with the native Indian is always requisite and ever present. No man ever "made up" his mind with his mouth open, or if he did, be sure there was exceedingly little of it to make up. Alas! we are so prone to get others to make up our minds for us, so glad to be relieved of the trouble of thinking, that too many of us go mooning through life with our eyes shut and our mouths open, and not until we have run our heads against a post are we reminded that we are independent entities, and of the necessity of mustering such bewildered senses as we possess to brace up our nerves for renewed endeavour.

Amongst the aborigines of America this dropping of the lower jaw is carefully guarded against. The Indian mother, when she hushes her babe, adjusts a bandage beneath the chin, if the child manifests any tendency to uncloset its lips in sleep; and a *man* with an open mouth is regarded as a coward or a fool. Catlin narrates that once when dissuading a native from engaging in a pugilistic contest with a huge Irishman, the blow of whose fist was as the fall of a sledge-hammer, the dauntless savage exclaimed, "What! do you suppose I am afraid of a man who goes about with his mouth open?"

Doubtless a vast amount of lung disease might be obviated if the atmosphere was always warmed and filtered, as nature intended it to be, through the nasal passages, instead of being hurried down, untempered and laden with impurities, through the mouth and larynx.

Probably the modern pocket-handkerchief may be credited with no small share in our backslidings from normal and healthy respiration. The prefix "modern" is used here advisedly, for we have no evidence that this article was used or even required by our Anglo-Saxon ancestors. The ancient Roman, if he wiped his nose at all, clearly did so with the tail of his shirt, for Arbuthnot informs us that "they made use of the lacinia or borders of their garments to wipe the face." Our contention, however, is, that noses in that age needed no wiping at all. Later on, the Romans

introduced into Palestine sudaria or sweat-cloths, which were adopted by the Jews, and so we read of Paul's handkerchief or apron working miracles of healing. These cloths were evidently for the wiping of the skin, and not for the reception of that mucus which we moderns, in so unseemly fashion, are perpetually blowing and trumpeting from our nasal organs. It is a fair and reasonable inference that amongst the early races of mankind this secretion was not formed after the present superabundant and artificial manner. In the reign of Elizabeth, even, handkerchiefs appear to have been principally worn by gentlemen in their hats as favours from young ladies. Probably it was not until after this that they became necessary appendages of dress, and doubtless the young men and girls of the period, infected as now with the ruling passion of vanity, took every opportunity, in season and out of season, of displaying their new acquisition and flourishing their bandanas. An universal and unwonted blowing of noses ensued, the result being that the mucous lining of the frontal sinuses, the antrum, the ethmoidal cells, and the pituitary membrane generally, become so tumid and congested that it was more facile to pass air through the mouth than through the nostrils, and this unnatural state of things, descending from generation to generation, has become so intensified and confirmed that one-half of us cease to use the nares as a respiratory track at all, and go about with open mouths, to the detriment of teeth and lungs and the economy in general.

There is yet another cause which long and careful observation proves to be more prolific of disease in the teeth than any or all of the others put together, namely, the diminutive size of the modern civilized jaws. Nature, we are taught, does all things well, but it would appear she would do considerably better if she bestowed upon us something like four teeth less than the allotted thirty-two with which we are provided; though, perhaps, after all, nature is not to be blamed in the matter. "God made man upright, but he has sought out many inventions." Probably our maxillary bones were capacious enough originally, but we have contrived, in obedience to the most merciless of tyrants, to contract them, just as our females have striven, happily with less success; to contract and crush in their waists. Is it possible to show one modern jaw in twenty, nay, in a hundred, that can hold its full complement of teeth? Are these not crushed and crushing one another into premature decay? But jaws were not always so. Let the reader make a pilgrimage to the southern shores of the county of Kent, and not far from the camp at Shorncliffe, in the borough of Hythe, he will find a mausoleum containing a vast collection of human bones, relics of ancient battlefields, picked up in the neighbouring plains, where Dane and Saxon fought and fell. Here may be seen hundreds of skulls whose jaws have room enough and to spare, and where the teeth, though a thousand years have passed away,

are sound and strong as yesterday. These sturdy warriors evidently had mouths capacious enough for whole potatoes, and the contained teeth, showing marks of considerable grinding down, as if from the mastication of much harder food than we eat nowadays, are regular, and sound, and serviceable.

Well, but how comes about the jaw of modern civilization? Alas! fashion, that tyrannizes over the clothing of our outer man, will not leave the man himself alone. A small mouth has come to be considered an element of beauty. Every would-be fashionable mother—therefore every mother—desires her babe to possess a pretty little mouth, and mothers can get anything they like, so they get children with pretty little mouths, Gothic-arched jaws, instead of the grand Norman rotundity which characterized the jaws of our ancestors. Do you ask how mothers can do this? Well, that opens up a wide subject—the subject of “maternal impressions”—about which there is much scepticism prevailing. The patriarch Jacob, however, knew all about it when he peeled wands of poplar and hazel and chesnut, and set them before the flocks, that they might conceive ring-shaped, speckled, and spotted; and it is no bold or lawless assertion to declare that a woman of cultivated mind, of elegant tastes, and with a genuine love of the beautiful and the true, can get handsome children if she will. Most of us have seen and recorded cases of monstrosity and deformity, the result of terrific and painful impressions during pregnancy, but few of us have noted, and fewer still recorded, as we might, cases of beauty and elegance of form and figure, the result of charming and pleasurable emotions, and yet it is indisputable that these are sufficiently numerous. Take two opposite instances out of several in the writer’s experience. A woman in the earlier months of gestation was crossing a dimly-lighted cellar when a toad hopped across her path. She instinctively closed her eyes and grasped (*clutched*, as she termed it) her left forearm with her right hand. It was an affair of a moment, and her self-possession was restored. When the infant came to the birth it was discovered to be amaurotic, and the left forearm was undeveloped, as if amputated below the elbow. The child is or was till recently a pupil at the Blind Asylum.

A lady of refined tastes was in the habit of sitting at work before a small group of statuary, with one little figure of which she was greatly enamoured. This was a “Cupid reposing,” his cheek resting on the back of his hand. When her baby was born and placed in his berceaunette, attention was called to the position he had assumed. It was precisely that of the statuette, of which the little fellow, in form, feature, and attitude, was a perfect model. Not only during the period of infancy, but to this day, now that he is a great boy, he may always be found when asleep in the same position, with his cheek resting upon the back of his hand. It may be mentioned that this lady’s children, of which she had eight, were

all beautiful, all had exquisite little mouths, and execrably bad teeth. Depend upon it, a woman's surroundings during the development of her future offspring are not a matter of indifference, and no careful or loving husband will so regard it. Do you suppose it imports not to a sensitive, emotional, and impressionable female whether she be encompassed by all that is pure and chaste and lovely, or whether she be surrounded by gross and vulgar images during her term of gestation? Of course, to an insensitive, unappreciative, and uncultivated mind it matters not whether she gaze upon an Apollo or a pump, but not so with the truly gentle and refined. Some years since the proprietors of the *Illustrated London News* published a chromograph of "Little Red Riding Hood." It commanded an enormous sale, and to this day it may be found in almost every house, from the mansion to the cottage. This charming picture probably has already had and will continue to have a sensible effect in ameliorating the deformities and exalting the beauties of our race, and the publishers well merit the successful result of their praiseworthy adventure.

Let us hear the conclusion of the whole matter. The daughters of Eve have persuaded themselves that a little mouth is a type of beauty; accordingly they have "gone in" for little mouths, and got them. Let them now resolve upon the opposite: "go in" for big mouths, look at them, long for them, think of them, dream of them; let the upper ten thousand give them that mighty and irresistible impulse, the stamp of "fashion," and in a few generations—long ere the advent of Macaulay's New Zealander—we may confidently hope to see the round jaws and the sound teeth of our Anglo-Saxon ancestors again.

ARTICLE VIII.—*Case of Perityphlitis.* By JOHN A. ERSKINE STUART, L.R.C.S.E., Dunse.

THE following case of a somewhat rare and obscure disease seems to me to be worth recording:—

Perityphlitis confounded with Oöphoritis—Previous Peritonitis going on to Suppuration—Patient at Menopause.

Mrs M., aged 39, married, sent for me on 4th March 1879. She was complaining of a most distressing cough, accompanied by asthma, which seemed to me at that time to be sympathetic, as she was suffering from a considerable amount of ovarian irritation, her menstruation being very irregular, the menopause evidently having come on early in her case. I prescribed tincture of squill and iodide of potassium with some benefit, and after another visit, having informed her that her symptoms were due to "the change of life," I gave up attending her. Even during

this first attendance on her, she informed me that, eight years ago, when she was delivered of her youngest child, she had had a "gathering" in the belly, preceded by inflammation for a fortnight. This "gathering" burst inwardly, the discharge escaping by the vagina. On the 12th April I was again asked to see her, and found her cough *in statu quo*, but on asking her if the previous inflammation had left any hardness behind, she said that she had never observed anything until I asked her, and then she thought there was a slight swelling, which I corroborated by examining her. This swelling was of an indefinite nature, nothing but a slight hardness being felt in the right iliac fossa on pressing the fingers deeply into the hollow. My diagnosis at first was that some slight *oöphoritis* was present, and I accordingly endeavoured by deobstruents to keep back the inflammation. In the first place, I prescribed as follows:—

R	Pot. brom.	.	.	℥ss.	
	Extr. ergot liquid	.	.	℥iij.	
	Tinct. capsic.	.	.	℥j.	
	Aq. ad.	.	.	℥viij.	M. et S.

Sig. ℥ss. *ter. die.*

During the time she took this mixture the tenderness greatly increased—so much so, that she could not sleep at night without hypodermic injections of morphinæ tartras. I now exhibited iodide of potassium in 5-gr. doses thrice daily, but she became so powerfully iodized, even with $2\frac{1}{2}$ grs. thrice daily, that I had to stop its use. I then tried her with tincture of iodine internally in 20 minim doses thrice daily. This agreed with her perfectly, but all the time the swelling was increasing slowly, and becoming excessively painful, especially at a point immediately above and posterior to the anterior superior spine of the ilium. About the beginning of May distinct deep-seated fluctuation could be detected at this painful point, and the swelling began to fall towards the lumbar vertebræ, where fluctuation could also be detected. In fact, the most excessive tenderness was present all over the right iliac fossa, and about an inch above the anterior superior spine, and over the greatest part of the space between the sacro-iliac synchondrosis and the spine, in its lumbar region. There never was any redness of the skin over the parts, but the patient could not lie in any position at all comfortably except on her back. The dyspnœa previously spoken of now increased very much, but was really a spurious dyspnœa. She could not say half-a-dozen words without halting in her speech, exactly as one does who has acute pleurisy. She also began to lose flesh rapidly, what from want of sleep and the want of food. On 24th May I had a consultation with Dr W. Campbell of Dunse, when we examined the patient most carefully, and he came to the conclusion that the case was one of *perityphlitis*, and that the abscess must be opened

immediately. I, up to this time, for a week or two back, had ordered poultices, more for the relief of pain than to expedite suppuration. However, by the time of the consultation, suppuration was much more superficial than it was a fortnight before. On 5th June, Dr Campbell and I visited the patient with the intention of operating. I opened the abscess where it pointed most, viz., midway between the spine and the anterior superior spine of the ilium. I used Syme's knife, making a deep free incision. Immediately on withdrawing the knife, Dr Campbell applied a quantity of prepared tow, soaked in a 1 to 40 solution of carbolic acid. About a quart of laudable pus escaped at this time, the swelling in the abdomen at once falling. The tow was adjusted by means of a strong binder. Under this dressing the discharge kept perfectly "sweet." The patient lost her dyspnoea, rapidly gained appetite, and could lie in any position in bed. She is now (1st August) able to walk a considerable distance. Before the abscess was opened, she walked very like a person with hip-joint disease, drooping the pelvis, and walking on the tips of the toes.

Remarks.—The cause of the disease in this patient is somewhat obscure, there evidently being no disease in the cæcum to account for it. My theory is, that the inflammation and abscess eight years ago was acute puerperal peritonitis. This disease, though in abeyance, seemed to have left a certain feeling that something was working there for all these years. The ovarian disturbance may have lit up the old enemy, which, spreading to the pericæcum, gradually went on to suppuration. My mistaken diagnosis shows how careful one must be not to concentrate the mind too much on one organ where so many lie in immediate contiguity. According to Dr Syer Bristowe, in *Reynolds' System*, this disease may, in the inflammatory stage, be mistaken for peritonitis due to perforation, as in typhoid fever, or to rupture of a hydatid or other abscess, or from the laceration of the cyst of tubarian or ovarian pregnancy, or from the extension of pelvic inflammation, especially from the female organs. Again, in the suppurative stage, it may be easily confounded with abscess in the same region, such as psoas abscess, renal abscess, spinal and pleural abscess. It may be also confounded with ovarian inflammation or tumours, with cancer of the venter ilei or cæcal glands, and even with aneurismal tumours.

In the *Medical Times* for 20th May 1871, there is a report of a most interesting discussion on this subject, originated in the Medical Society of London by a paper on "The Treatment of Perityphlitis," by the then president, Dr Andrew Clark. In this debate it came out that scarcely a year passes at Eton without one or more boys suffering from this disease. Dr Clark ascribed this to over exercise on the part of the boys, but Dr Habershon suggested a far more likely cause, viz., blocking of the cæcum with

the undigested oranges, of which it seems the Eton boys, like most others, are very fond. The gist of this discussion was—to be very cautious, where there was tenderness in the caecal region, in giving purgatives; rather to use opium by the mouth, and enemata to unload the bowel. The late Mr Maunder mentions being called into consultation to tap an *ovarian cyst*, and, on examining carefully, found perityphlitis present. Dr Routh recommends smearing the abdomen with extract of belladonna.

The introduction of antiseptic surgery has in this disease, as it has done in most others, thrown a new light on the treatment. Even the simple antiseptic dressing which I used succeeded admirably. A case of this kind under the old *regime*, with a tent introduced, and a great poultice put on after the incision was made, would probably have become putrid, and the patient have died. Under strict antiseptic precautions this case could have been relieved much earlier, and probably with great benefit. As it was, the carbolized tow answered admirably, the discharge being quite sweet all along.

Another great thing to be remembered in this disease is to support the general strength. At one time I thought my patient would sink from hectic, but by carefully attending to her dietary I got her strength kept up. After evacuation of the abscess she had a splendid appetite, and soon got up her strength on beef-steaks, port-wine, and malt extract.

ARTICLE IX.—*The Therapeutics of Belladonna in Intestinal Obstruction; Notes of a Case; Faecal Vomiting; Recovery.* By ALEX. THOM, junr., M.A., M.B., and C.M., Crieff.

(Read before the Perthshire Medical Association, 3d Oct. 1879.)

THE following case of intestinal obstruction treated by belladonna, and similar in some respects to others already published (Brit. Med. Jour., etc.), is interesting, both on account of the age of the patient and as broaching the question whether the full therapeutic action of the drug may not be materially hastened by the use of mild aperients after its physiological action has been established. In Dr Tuckwell's case (Brit. Med. Jour., Nov. 23, 1878) four days elapsed between the manifestation of the physiological phenomena and the desired therapeutic effect. In others a similar and even longer period has elapsed.

M. C., 73, a thin frail old woman in feeble health for some years, had suffered from constipation for several days, and in the forenoon of 22d September 1878 began to experience pain in the abdomen, which increased in severity towards evening, when she took a dose of castor-oil. This was not retained. During the night the pain became very intense, and accompanied by retching and

vomiting. Hot fomentations and poultices were applied ; but not having experienced any relief, she sent for medical assistance.

23d, Face anxious. Pulse about 100. Tongue dry and coated. Complains of great pain in abdomen, especially towards right side. On inspection, abdomen is prominent. Great pain is caused even by light palpation. A tumour can be felt in the right iliac region about $3\frac{1}{2}$ inches long and $1\frac{1}{2}$ or 2 inches broad, its long axis corresponding to that of the body. It is hard, and cannot be removed by manipulation, which increases the pain. The injection of warm water *per rectum* brought away a quantity of well-formed fecal matter, natural in appearance and colour, but had no effect on the tumour, and the pain remained the same. She cannot take any food, feels sick, and is much troubled by retching. Forty minims of liq. morphi. hydrochlor., repeated in $1\frac{1}{2}$ hours, procured a few hours' restless sleep and temporary relief from pain.

Vespere, The tumour and swelling of abdomen remain the same, and there is still great pain increased on movement, or when touched. An ounce of castor-oil was ordered to be given should the vomiting not return. Fomentations continued. Forty minims of liq. morph. hydrochlor. at bed-time.

24th, Patient weaker ; pulse 100, small ; skin hot and dry. Slept none. Vomited the castor-oil, and on two successive occasions a considerable quantity of semifluid matter having a fecal smell and character. Pain intense. Enemata were tried, but only about half a pint can be retained, and that only for an instant. Tumour in abdomen in same condition as yesterday, but more tender to the touch, and abdomen more swelled and tympanitic. Ordered one grain of extract of belladonna in pill every hour.

25th, Nine pills have been taken. After the sixth her mind began to wander ; she became drowsy, and occasionally dropped off into a restless sleep. She has had the last three pills at intervals of two and three hours. Face flushed, has been somewhat delirious all night, and is now talking incoherently. Pulse about 120, weak. Micturition frequent. Mouth very dry, no vomiting, and no pain except when touched. Tympanitic distension of abdomen less, but no change in the abdominal tumour. Pupils dilated. The physiological action of the belladonna (and also its therapeutic action as far as pain is concerned) having been established, it is discontinued. Ordered milk, beef-tea, and lemonade made from the fresh lemon. Two pills, each containing $\frac{1}{3}$ gr. of podophyllin, at noon, to be followed by magnesiae carbonatis $\frac{1}{2}$ ss, magnes. sulph. $\frac{3}{4}$ ss, aquae cinnamomi $\frac{3}{4}$ j, in the evening.

26th, Bowels moved freely twice, the first time about ten hours after the administration of the podophyllin, and less than two hours after the saline draught. Tumour gone. Abdomen natural size. No pain, only tenderness on pressure. The motions consisted of large masses of hardened feces, varying in colour from very dark olive green to light yellow, and a considerable quantity of fluid and semifluid matter.

She made a fair recovery, considering her age and feeble condition.

Remarks.—Possibly in such cases belladonna proves serviceable rather by producing physico-vital changes in the walls of the intestinal canal, than by increasing the secretions which act chemically and mechanically on the contents; we know, besides, that stimulation of the sympathetic fibres which supply the salivary glands causes the secretion of a viscid saliva, small in quantity; and as belladonna is held to stimulate the vaso-motors, I do not think, in the present state of our knowledge, it is too much to assume that, if it increases the intestinal secretion at all, that secretion has a viscid rather than a watery character. If this be true, such medicines as will tend to supply the proper secretions are clearly indicated.

Smokers hold that a pipe of tobacco after breakfast is a pleasant but efficient means of procuring easy movement of the bowels. I have no doubt that here there is directly through the nervous system a reflex action on the muscular fibres of the intestines. Belladonna and tobacco belong to the same natural order, and it is to be surmised that their therapeutic as well as their physiological effects are similar. To say, however, that the action of a drug is directly through the nervous system, is a very vague way of expressing that action; in fact, it is in too many cases a cloak to hide our ignorance. When we are asked what part of the nervous system is affected, which nerves are paralysed and which stimulated, whether the nerves are acted on directly and reflexly or from the nerve-centres through the blood, the answer is by no means easy to find, and indeed in many cases impossible, for our knowledge of therapeutics is still deplorably behindhand.

Let me remind you shortly of the innervation of one or two of the so-called involuntary muscles of the body, and let us notice first the arrangement of the nervous supply to the heart, not because it is perhaps the simplest, but because it has been worked out with the greatest approach to certainty.

We know of four different sets of nerves which are concerned in maintaining and promoting or controlling the functions of the heart:—1st, The intra-cardiac ganglia; 2d, The superior branch of the vagus; 3d, The inferior branch of the vagus; and 4th, The cardiac branch of the sympathetic. (These are diagrammatically represented in this rough sketch after Rutherford.) To the intra-cardiac centres is due the automatic action of the heart. The cells which they contain have an efferent nerve-fibre from the endocardium, and an efferent one to the muscular fibres, and are continually evolving energy. This, when it has gained a certain tension, is liberated, and causes muscular contraction. The rapidity with which this energy is produced may be accelerated by stimulation of the afferent nerve from the endocardium, and by other nerves and agencies. The superior cardiac branch of the vagus is

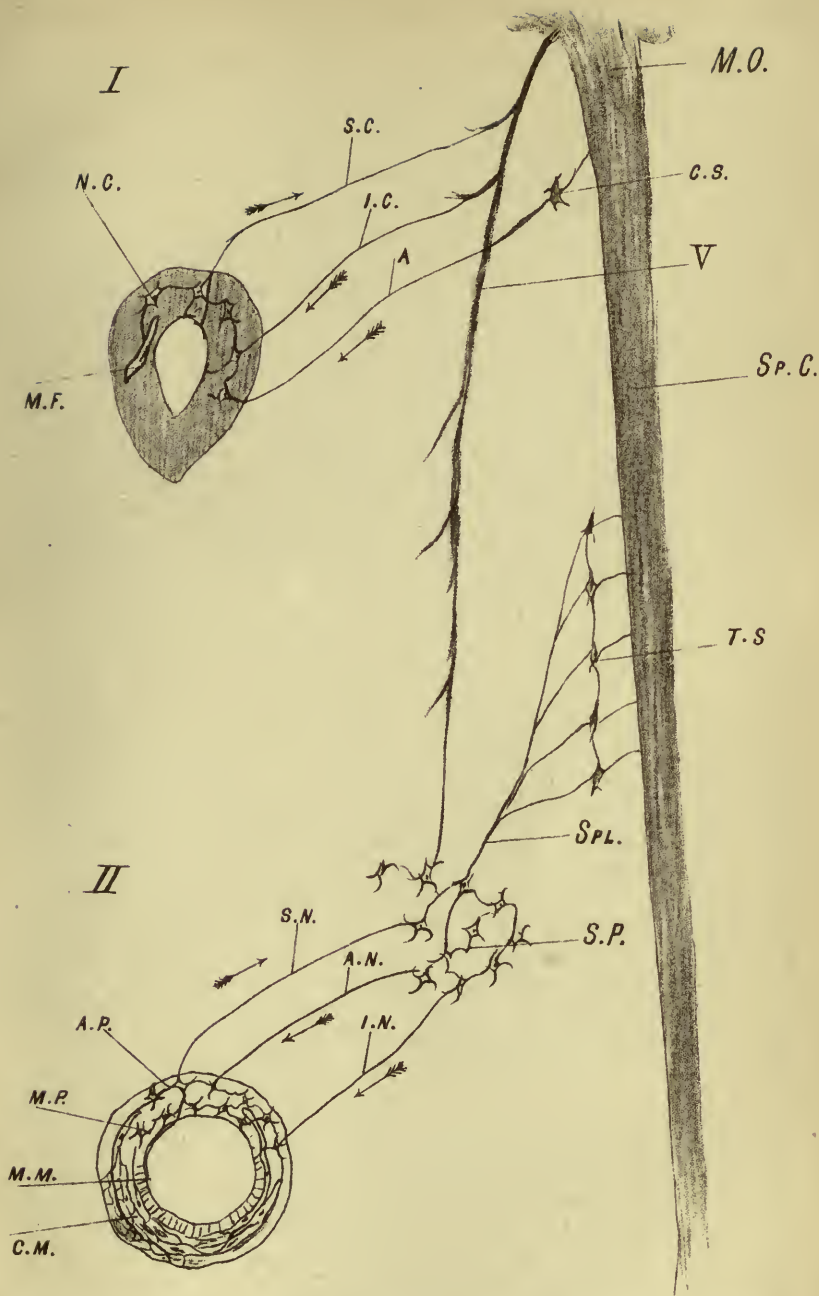


Diagram to illustrate the Innervation of the Heart (I.) and Small Intestines (II.) (After Rutherford.)

M. O., Medulla oblongata. *Sp. C.*, Spinal cord. *V.*, Vagus nerve. *N. C.*, Intracardiac nerve cells. *M. F.*, Muscular fibre. *S. C.*, Superior cardiac. *I. C.*, Inferior cardiac branch of vagus. *C. S.*, Cervical sympathetic ganglion. *A.*, Accelerating nerve. *T. S.*, Thoracic sympathetic ganglia. *SPL.*, Splanchnic nerve. *S. P.*, Solar plexus. *S. N.*, Sensory nerve. *A. N.*, Accelerating nerve. *I. N.*, Inhibitory nerve. *A. P.*, Auerbach's plexus. *M. P.*, Meissner's plexus. *M. M.*, Mucous membrane. *C. M.*, Circular muscles.

sensory to the heart, and is also excito-cardio-inhibitory. The inferior cardiac branch is the inhibitory or controlling nerve, and its fibres pass into the nerve-cells in the substance of the heart. If this nerve be divided the heart beats faster, and stimulation of the lower-cut end causes slowing of the heart, the evolution of energy in the cells being inhibited. Belladonna causes increased action of the heart by paralysing this nerve. The sympathetic branch is the accelerating nerve, and its action is therefore directly opposed to the last mentioned.

A similar mechanism is found in connexion with the intestines, but its several portions cannot be so well defined. The vagi and splanchnics unite in forming the solar plexus, from which nerve fibres pass to all parts of the small intestines, breaking up in their walls into smaller gangliated plexuses called Auerbach's and Meissner's plexuses. These plexuses, containing nucleated nerve cells, are analogous to the intracardiac ganglia, but the muscular action over which they preside is not automatic. Each cell possesses an afferent or sensory nerve fibre from the inner surface of the gut, and an efferent one which may be either motor (*i.e.*, to a muscle fibre) or secretory (*i.e.*, to a gland). Stimulation of the afferent fibre by means of food causes the evolution of nerve energy by the nerve cell, and consequent muscular contraction or glandular secretion or both. To these cells, then, is primarily due the peristaltic action of the intestines, and as that is produced by the combined action of the circular and longitudinal muscular fibres, probably separate groups of nerve cells preside over each. Mild stimulation of the vagi and splanchnics gives rise to peristaltic action, probably by accelerating the evolution of the energy in the nerve cells. Strong stimulation of the splanchnics inhibits that action. But the splanchnics are also the vaso-motor nerves to the intestines, and stimulation of them decreases the size of the blood-vessels, but increases the quantity of blood passing through them. The splanchnics thus seem to be both accelerating and inhibitory, and on them in all probability the belladonna exercises most influence, either reflexly or by direct stimulation of their centres through the medium of the blood. Section or paralysis of the nerves from the solar plexus to the intestines increases the secretion of intestinal juice.

In the ordinary course of digestion, the presence of food in the small intestine gives rise to stimulation of the afferent nerves proceeding to Auerbach's and Meissner's plexuses, whereby nervous energy is there evolved, and peristaltic action takes place. Thus the food is passed on lubricated by secretion, which flows in obedience to the same nervous stimulus. But also the presence of food in other parts of the intestinal canal (stomach, for instance), and various other stimuli acting through afferent or sensory nerves passing to the medulla oblongata and spinal cord, bring about, reflexly through the solar plexus, peristaltic action. By this is

explained the tendency to peristalsis in the lower part of the gut which follows the entrance of food into the stomach.

The theory which I at present hold with regard to the action of belladonna on the intestines in cases of obstruction is as follows :— When from some reason or other a portion of the contents of the gut has been delayed in its passage along the canal, its very presence stimulates the afferent nerves to the intramural ganglia, whereby peristaltic action is set up. From its shape or other physical character this peristaltic action may not be sufficient to urge it along, and soon the afferent fibres to the solar plexus and more distant nerve centres are also stimulated, whereby reflexly increased peristalsis is brought about. It is while this rapid peristalsis is going on that I imagine invagination most likely to occur, for it is not difficult to understand how easily a tightly contracted ring of intestine may slip under an immediately adjacent ring in a state of relaxation, and be grasped by the latter when it in turn contracts. Even this increased action may be insufficient to remove the offending mass; and if so, it is grasped tighter and tighter as it gives rise to more and more irritation of the afferent nerves, until at last there is no longer peristalsis, but strong spasmodic muscular contraction. Secretion too, which might lubricate the surface, is put a stop to. At this stage, or even before it, belladonna may be helpful, and how? Well, the stimulation of the splanchnics, which is at first somewhat slight, causes increased peristalsis, the belladonna acting probably through the fibres derived from the spinal cord. We also get through the sympathetic nerves contraction of the bloodvessels, which of itself causes some intestinal movement. If the obstruction be slight, this increased peristalsis may be sufficient to overcome it; should it not do so, a continuance of the drug brings about a further stimulation of the splanchnics (and more particularly their sympathetic fibres), with possibly paralysis of some accelerating fibres. The result of this stimulation is inhibition of the energy evolved by the ganglionic cells, so that the muscular fibres, and more particularly the circular ones, no longer stimulated to contract to their utmost, gradually relax their hold, and the contained mass is no longer rigidly held as in a vice. Now the walls and the contents have some chance of accommodating themselves to one another, and an invagination has an opportunity of being released; the flatus, too, which has accumulated above the obstruction, finds its way downwards, and as the inhibitory action passes off, perhaps the returning natural peristalsis may be sufficient to remove the contents. Frequently, however, a long time elapses before that occurs; and it is not to be wondered at, for as section of the intestinal nerves increases the secretion, stimulation must decrease it; and so, partly due to the belladonna, and partly to the pathological condition, that secretion is wanting which might lubricate the contents, and otherwise so transform them that they might be the more easily

passed onwards. At this stage, I think, such aperients as are known to cause a somewhat watery secretion, and at the same time mild intestinal stimulation, will be found valuable.

In cases of spasmodic asthma, the action of stramonium, another plant of the same natural order, is to be explained in a similar way to that of belladonna here. Some irritation, central or peripheral (and if the latter, reflexly), causes stimulation of the nerves supplying the bronchial muscles, whereby strong contraction takes place. The stramonium so acts on the peripheral end-organs of afferent nerves in the lungs that they in turn stimulate the inhibitory nerves. These again retard or stop the evolution of nerve energy in the nerve cells, and so the muscles, freed from their stimulation, regain their normal tone, and the bronchi their natural calibre.

Part Second.

REVIEWS.

Neurological Contributions. By WILLIAM A. HAMMOND, M.D., Professor of Diseases of the Mind and Nervous System in the Medical Department of the University of New York, etc.; assisted by WILLIAM J. MORTON, M.D., Clinical Assistant to the Chair of Diseases of the Mind and Nervous System in the University of New York. Vol. i., No. 1. Putnam, New York, 1879.

The Construction, Organization, and Equipment of Hospitals for the Insane. By WILLIAM A. HAMMOND, M.D. New York, 1879.

An Asylum or Hospital Home for Two Hundred Patients constructed on the Principle of Adaptation of various Parts of the House to various Creeds and Mental States of Inhabitants, with Plans. By T. S. CLOUSTON, M.D., Physician Superintendent of the Royal Edinburgh Asylum. Boston, 1879.

DR HAMMOND'S neurological contributions are the first of a series which is to consist of original memoirs on the mind and nervous system in health and disease, reports of interesting clinical cases, with short reviews of the most important publications relating to the nervous system.

The first paper is on the Non-Asylum Treatment of the Insane, by Dr Hammond. We quote the opening sentences.

"It is the commonly received opinion among physicians and the public generally, that as soon as possible after an individual becomes

insane, he or she must be at once placed under the restraint of a lunatic asylum. No matter what the type of mental aberration, no matter what the facilities for receiving care and attention at home, the asylum is regarded as the necessary destination of the one so unfortunate as to be deprived wholly, or in part, of the light of reason. For this state of affairs the medical officers of insane asylums are mainly responsible, for they have very diligently inculcated the idea that they alone, by education, by experience, and by general aptitude, are qualified to take the medical superintendence of the unfortunate class of patients in question, and that restraint and separation from friends and acquaintances are measures in themselves which are specially curative in their influence."

"It will be among the chief objects of this memoir to show that these views are erroneous; that the medical profession is, as a body, fully as capable of treating cases of insanity as cases of any other disease; and that in many instances sequestration is not only unnecessary but positively injurious."

One is naturally pleased on hearing an eminent authority confirm surmises which had long existed in his own mind. We have certainly long been of opinion that mad people were sent far too readily to asylums, and many of them, instead of being benefited, were much injured by an enforced residence amongst other lunatics. Let any one think what an asylum is, and how a sensitive person would feel at being imprisoned in it; let him recall that many of its inhabitants have become insane simply because they are too sensitive. They cannot bear wrong and sorrow and disappointment, and resent what they believe to be injustice in an outrageous manner, or become morbidly melancholy. But imprisonment in an asylum is regarded by them as an additional wrong. They shrink from the association of the mad people by whom they are surrounded; and if they lose the remembrance of old fears and anxieties, new and fresh ones are soon accumulated in a place where they are so much dependent on others, and where discontent and despondency are the prevailing tones. We are quite at a loss to imagine what curative influence exists in an asylum. Many superintendents have quite given up all medical treatment whatever, save in incidental illnesses, though they pay considerable attention to diet and exercise. But, with the best intentions, the patient must often be fed on a collective dietary, which often ignores individual tastes; and they must be walked about or otherwise exercised with numerous other fellows in misfortune, whose company they dislike, and whose language and conduct fill them with alarm that is certainly not quite unfounded.

When asylums were first established, they were designed to keep lunatics under severe restraint, and in general to prevent them doing harm to themselves or others; but as we have almost

entirely discarded strait-jackets and locked doors, and are beginning to do without airing-courts and high walls round the grounds, Dr Hammond's question seems natural enough, "Why should asylums now differ from ordinary hospitals?" We hear so much of the good of boarding out paupers with needy crofters and impecunious handloom weavers that we are tempted to suspect that ignorance and poverty and hard fare are as good as medical knowledge and a plentiful diet in the treatment of insanity, or at least that asylums have some positive disadvantage which neutralizes the good in them. Seriously speaking, the horror and dread attached to the insane are disappearing with better knowledge and better guidance. Since the treatment of insanity is entirely losing its special caste, people may well ask why it is necessary to take such a serious step as getting the order of a magistrate to remove a man by force from his house and imprison him in an asylum, when it has been proved that the chances of him injuring himself and others are very much less than they were supposed to be? It may be true that in one sense it is no more disgrace for a man to have cerebral meningitis than to have pneumonia, but there is not the smallest doubt that it is very disastrous for his future prospects to have it known that he has been treated in an asylum. It is not very likely that people should refuse to give a man a position of trust, or shun marrying in his family, because he has had inflammation in the lungs: but it is quite different with insanity; hence medical men who send a deranged man to an asylum who might speedily recover in lodgings at the sea-side, or boarded out for a few weeks with a country doctor, are really inflicting a severe and indelible injury upon him to confer a questionable benefit.

Of course, no one will deny that there are cases where an asylum is useful, and others where it is indispensable. Just as we must have hospitals for the poorer classes, so must we have asylums for paupers, or for those living in wretched homes where they would neither be properly watched nor carefully fed. There is no use in keeping a general paralytic at home, and a powerful and determined maniac who tears and smashes everything had much better be in firm and experienced hands. The same may be said of a man obstinately bent on committing suicide, but there are other cases which had much better be treated in private residences. To this class belong most cases of puerperal insanity, melancholia, and people affected with the monomania of suspicion.

"The patients," says Dr Hammond, "for whom lunatic asylums are particularly deleterious, are those who display mild forms of mental derangement, who are capable of reasoning logically in regard to most of the circumstances presented to their minds, and who are enabled to control themselves to such an extent as to prevent the exhibition of themselves in ridiculous, violent, or degrading aspects. Such persons feel very acutely the injustice and

disgrace of incarceration. They know they are not dangerous to themselves or others, and the deprivation of their liberty they regard as cruel and uncalled for. The violent rupture of social and family ties is especially injurious to those patients, and the association which they are compelled to have with lunatics far more profoundly affected than themselves cannot but have, as Maudsley says, a highly pernicious influence upon them."

There is an assertion which is very often put forward in Hospital Reports, that if the lunatics were sent to an asylum when the first appearance of mental disorder was recognised, their chance of recovery would have been much greater; and that a large amount of chronic and incurable insanity is owing to the absence of early asylum treatment. Of course, there is no doubt that the proportion of recoveries in an asylum would be much increased if there were a larger proportion of cases sent there who might be expected to recover without such treatment; and we do not dispute that patients are often absurdly treated and neglected out of doors, who would have been much better treated in an asylum. But looking to the serious consequences of leaving a person under lunacy certificate, depriving him of his liberty as a preliminary to therapeutic treatment, it is worth while asking, in what the superiority in asylum treatment consists? As Dr Hammond observes, physicians of asylums cannot claim any superior skill and experience in their treatment of insanity, as they rarely see the cases in their early stage. What they ought to do is to study their incurable cases individually, and consider what kind of ones have really suffered from want of early treatment. The only instance we can recall of such an examination was recorded by Dr Frederick Skae in the Report of the Stirling District Asylum.¹ The conclusion which he arrived at was, that out of a large number of incurable cases there were only two of the whole number whose prospects had probably suffered from such delay. It seemed evident that incurability in all the others had been determined by causes which could not have been successfully combated by asylum treatment, no matter how early it had been obtained. It is much to be regretted that the general practitioner is so often ignorant of the nature and treatment of insanity. But in most large towns there must be physicians well acquainted with nervous diseases in all their forms.

Only six years ago, Dr Hammond wrote in his well-known treatise on the Diseases of the Nervous System: "It is with great pleasure that I am enabled to state, after having visited a great many institutions for the insane in Great Britain and on the Continent, that American asylums are very far superior in every respect." But man lives to learn as well as to teach. The distinguished Professor now views

¹ The paper is quoted in full in the *Edinburgh Medical Journal*, July 1875, p. 66.

things in a different light, and the two pamphlets under review—for the second one is a continuation of the same argument—contain some trenchant attacks upon the general management of asylums in the United States. These strictures are reinforced by the vigorous pamphlets and articles of Dr Wilbur and Dr Spitzka on lunacy reform. They especially complain that mechanical restraint, including the camisole and the "Utica Crib," are frequently employed merely to save trouble to the attendants, and that forcible feeding is sometimes used without even the presence of the physician, and that some of the superintendents do not regularly visit their patients. They also remark that all the contributions of any merit on the pathology of nervous disease and insanity in America are made by men who are not connected with asylums. Any one who will take the trouble to compare the *Chicago Journal of Nervous and Mental Diseases* (one of the best of its kind) with the *American Journal of Insanity*, printed at the public expense (and no wonder, for what bookseller would look at such an undertaking?), will be ready to agree to the last of these charges. About the other and more serious ones we should prefer to say nothing. Dr Hammond, Dr Wilbur, and Dr Clymer are quite able to fight their own battles without the aid of any men from England, who might be viewed as unpopular and suspicious allies; and no doubt, in the discussion which they have raised, the truth will come out.

The second of Dr Hammond's papers is a description of three cases of arrested development, three boys in one family affected with genetous idiocy. Their photographs are given. The paper is of an interesting character; and we regret that we have not room to discuss some of the remarks which accompany the description.

The most noticeable of the other papers is a graphic account, by Dr Hammond, of some cases of what he calls mysophobia, or fear of pollution—a morbid dread of dirt and vermin, leading the patients to pass their whole lives in washing themselves and trying to prevent contamination. It is analogous to the *folie de doute* of the French, or the *Grübelnsucht* of the Germans, consisting essentially of predominant ideas of a painful or harassing character. Dr Hammond obtained successful results by treating his patient with small doses of podophyllin and aloes, and large doses of bromide of potassium, sodium, or calcium. If there is a tendency to melancholia, he uses opium.

In another paper Dr Hammond describes a case of aphasia of syphilitic origin, ending in recovery. He uses iodide of potassium in progressively increasing doses, mounting as high as 150 grains three times a day, with small doses of bichloride of mercury.

There are also papers on Insanity of Malarial Origin and Hysterical Deception. Dr Morton's observations on the toxic effects of tea confirm what we have remarked in practice about

the pernicious consequences of excessive tea-drinking. He has studied the symptoms which appear in professional tea-tasters, of whom, he says, there are several thousands in New York. The immediate effects of the large consumption of tea are—flushing of the face, exhilaration, and a great flow of ideas. This is followed by a reaction, with headache, nervous tremors, and mental depression, and a state of unrest, insomnia, gloom, and continual alarm. There is also dyspepsia, with vertigo, irritation from the stomach, and sour taste.

Two of Dr Morton's papers record the treatment of chronic eczema and ulcers by galvanism.

The third pamphlet on our list is a reprint from the Tenth Annual Report of the State Board of Health of Massachusetts. It was written by Dr Clouston at the request of the Board, and has since appeared in the *Journal of Mental Science* for October 1879. We cannot enter here upon a discussion about the details of the construction of an asylum, but we heartily recommend the pamphlet for the instruction of those who have to do with such an undertaking. A better adviser than Dr Clouston could not be had, and we hope to see the learned Doctor superintending the construction of an asylum altogether to his mind, with a minimum of discussion on the part of the managers.

Paddington: Report on the Necessity of Latrine Accommodation for Women in the Metropolis. By JAMES STEVENSON, M.D., Medical Officer of Health for Paddington.

No doubt such accommodation should be provided in all our large cities. We only regret that, owing to the stupid inertness of the sanitary authorities, it has been found needful to discuss the matter in print. Dr Stevenson's little report is written in a sensible and practical manner. It would appear that London is actually behind Glasgow and Nottingham in this convenience. Such accommodation is provided in New York, and has long existed to a certain extent in Paris.

A Manual and Atlas of Medical Ophthalmoscopy. By W. R. GOWERS, M.D., F.R.C.P. London: Churchill.

HAD Dr Gowers followed out what he says in his preface was his original intention, of merely publishing the beautiful series of illustrations contained in his work as it now stands, with a short account of the cases from which the drawings were taken, we should have been deprived of one of the most valuable systematic

works on the subject of medical ophthalmoscopy which has yet appeared in any language. Dr Gowers, while profoundly conversant with the literature of his subject—to a degree, indeed, which a specialist might envy—has not allowed himself to be influenced to any undue extent by the writings of others, however authoritative their opinions might be considered; but, while fairly stating their views where this is necessary, he at the same time brings to bear upon them the experience derived from his own extensive observations; and when, consequently, they receive confirmation or not at his hands, this is all the more valuable as being the outcome of the most searching and unbiassed criticism. It would be impossible within the limits of a short review to convey any adequate idea of the extent of Dr Gowers' work. In Part I., which is entitled "Changes in the Retinal Vessels and Optic Nerve of General Medical Significance," optic neuritis and atrophy necessarily occupy the largest space. After a preliminary description of the changes of the vessels, as to size, arrangement, structure, etc., seen in disease, as also the state of the circulation in different conditions, in which great care is taken to warn against the mistakes that easily arise from a want of careful observation of physiological variations, the author enters upon the consideration of optic neuritis. The ophthalmoscopic appearances are first described, and copious reference is made to the excellent series of autotype plates in the atlas, which exhibit every stage and form of the inflammation, whilst in Plates 13, 14, and 15, a number of drawings from microscopical preparations illustrate clearly the local pathology of this condition. A very careful chapter is next devoted to the symptoms of neuritis, which, when present, are three in number; diminution of the acuteness of vision, restriction of the field of vision, and peripheral or complete colour-blindness. Although, thanks to the example set by Hughlings-Jackson, Albutt, and others, physicians are gradually becoming alive to the important aid in diagnosis of cases of supposed cerebral lesion afforded by an objective examination of the *fundus oculi*, the equally important subjective examination has, we think, been hitherto very much neglected. The following quotation shows what conclusions as to the approximate seat of the lesion may be gathered from the symptoms: "A symmetrical hemiopic defect in the field means an intra-cranial cause; an unsymmetrical lateral defect, especially a loss of the temporal halves, commonly means pressure on the chiasma—a very common cause of blindness in these cases, the pressure being exerted by a distended third ventricle. Complete loss of sight of one eye and loss of the adjacent half of the other field is probably of cerebral origin. A peripheral restriction of the fields usually means damage in front of the optic commissure, and in most cases of intra-ocular neuritis, damage from the visible changes. A central scotoma is observed only when there is a conspicuous lesion at the macula lutea."

With reference to conclusions to be drawn from the duration of the inflammation, the author says: "A chronicity of the neuritis probably may be taken as an indication of chronicity of the central disease. The converse proposition, however, that all forms of very chronic brain-disease entail a chronic form of neuritis, does not by any means hold good." The chapter which follows on the relation of optic neuritis to encephalic disease will well repay a careful study, but the conclusions at which the author arrives are too numerous to be here stated. In the chapter on optic atrophy we again meet with the same thoroughness and accuracy in the description of the appearances indicative of pathological change, and the same stress laid on the proper recognition of physiological variety. Dr Gowers recommends the examination of the disc with the direct method and weak illumination; and there can be no doubt that, where a detailed examination of the fundus is necessary, this method is almost indispensable. "The diagnosis of simple atrophy of the optic nerve," he says, "rests especially on the change of colour; and the chief difficulty in the diagnosis is due to the degree of pallor sometimes seen as a physiological condition. The existence of amblyopia, otherwise unexplained, is strong evidence that the pallor is pathological. The pallor of the temporal half of the normal disc may be great when the physiological cup is large, and, as already stated, may easily be mistaken for atrophy. It is certain that many normal cases have been described as 'atrophy of the temporal half of the disc.' It is doubtful whether an atrophy is ever confined to the temporal half of the disc, in which, ordinarily, the nerve fibres are very few. Although it is true that a slight degree of atrophy may produce the most distinct changes in this half of the disc, yet some pallor is always to be recognised in such cases in the nasal as well as the temporal half." Under the symptoms of atrophy the alterations in the colour sense are described, and in one case figured for the first time, so far as we are aware, in an English systematic work. In connection with this subject, we miss any adequate reference to the amblyopia centralis of Leber, in which, along with the diminution of acuteness of vision, there exists a central colour scotoma, the recognition of which affection is the more important, in that the prognosis is invariably favourable. There is no reference either, under Prognosis, to v. Græfe's lectures on amblyopia and amaurosis, although the numerous conclusions to which v. Græfe arrived have been abundantly confirmed since. Perhaps, however, Dr Gowers considers the standpoint taken up as too ophthalmological. In Part II., the ophthalmoscopic changes in special diseases are considered, beginning with the various diseases and injuries of the nervous system, the most interesting chapters being on Tumours, Meningitis, and Epilepsy. With reference to the last affection, Dr Gowers says: "In cases of epilepsy, in which the fits were frequent, Dr Allbutt has seen hyperæmia of the discs, and even some

exudation into them. As a rule, my own observations have given quite negative results. In one case, however, I met with marked change in the discs, developed under observation during a series of exceedingly severe convulsive attacks recurring at short intervals for several days." Then follow paragraphs on albuminuric retinitis, the changes in diabetes, pernicious anæmia, leucocythæmia, etc. The retinal hæmorrhages occurring from loss of blood, and which, according to the statistics of Fries, are most frequently met with in connection with hæmorrhage from the gastro-intestinal tract, and are in 90 per cent. bilateral, receive careful consideration. Dr Gowers remarks "that sight is affected much more frequently after spontaneous than after traumatic hæmorrhage, and that of the latter form venesection is the most frequent antecedent, accidental or surgical wounds being very rare causes." The collection of cases, with the atlas at the end of the book, afford in themselves a great opportunity for the study of medical ophthalmoscopic changes. The autotype sepia drawings, especially, are exceedingly good, and are all the more valuable as illustrating the actual cases in the text. Dr Gowers has supplied, in the publication of the volume before us, an actual want in medical literature.

Clinical Remarks on Gleet: its Causes and Treatment. By J. C. OGILVIE WILL, M.D. London: J. and A. Churchill. 1879.

THIS pamphlet is a reprint of a lecture delivered in the Aberdeen Royal Infirmary, having some annotations added to make it more complete. It is an excellent digest of the most modern views on the subject. Dr Otis' opinions are stated fully. This gentleman is able to find a stricture in every urethra from which a slight discharge proceeds. He has got some hard and fast notion what the calibre of every man's urethra ought to be, and should it, unfortunately for the patient, not come up to Dr Otis' ideal size, the urethra is sliced to make it fit the proper bougie. Considering the tendency gleet has to disappear in a sudden and miraculous manner, we ought to be chary in performing any cutting operation on a part so sensitive as the urethra, where such meddling is not devoid of danger to life.

We agree with Dr Will in recommending as the best and safest of all remedies for the cure of gleet "the passage once or twice a week of a cold, well-oiled metallic bougie, combined with the internal use of cantharides or ergot." In speaking of injections, Dr Will wrongly gives the credit for the introduction of kaolin in the treatment of gleet to Mr Cheine. It was Dr Godon, an American, who first recommended its use; in our hands we have found it as untrustworthy a remedy in gleet as any other injection.

Traité Pratique des Maladies Vénériennes. Par le Dr LOUIS JULLIEN. Paris: Baillière et Fils. 1879.

THIS is the most complete work that has been published on this subject for many years. It goes minutely into every branch of venereal disease, and extends to over 1000 pages. The First Part treats of gonorrhœa and its many complications, and simple chancre with its complications. The Second Part has to do with syphilis in its primary, secondary, and tertiary periods. All the latest information on each one of these sections is given, which, along with the author's own experience, makes the chronicle most valuable.

The work is plentifully illustrated with most life-like and artistic drawings. At the end of each chapter there is an exhaustive reference list of authors who have written on the subject treated of. Both as a work of reference on venereal diseases, and as an ordinary text-book on the subject, it deserves the highest commendation.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LIX.—MEETING I.

THE Medico-Chirurgical Society met, on Wednesday evening the 8th November, in the hall of the Society of Arts, 117 George Street—Professor Sanders, President, in the chair.

On the call of the President for the exhibition of morbid specimens,

Dr Byrom Bramwell exhibited—1. A specimen of RUPTURE OF THE HEART; 2. A specimen of LATENT IDIOPATHIC PERICARDITIS, notes of which will appear in a future number of the Journal.

Dr MacGillivray exhibited two specimens of OVARIAN TUMOUR. Ovariectomy, he said, had become an operation of such everyday occurrence that few cysts were at the present time considered worthy of notice unless they presented some anomaly of structure or of size, or when great difficulties had been experienced in their removal or in the after-treatment of the case. This, he thought, was apt to give a wrong impression, and he therefore showed these tumours on account of the extreme simplicity of the operation and the complete absence of any severe symptoms. The smaller of the tumours was removed on the previous Saturday, by Dr Heron Watson, at Chalmers' Hospital, from a young woman aged twenty-

nine. Pain in the right iliac region and uneasy symptoms had manifested themselves three years before, but the presence of a tumour was not discovered until a year ago. She was tapped in June of the present year, ninety ounces of fluid being drawn off. The operation for removal of the tumour was performed with antiseptic precautions. There was a slight amount of chloroform sickness and local pain experienced the following day, but since then there had been no bad symptoms of any kind, pulse and temperature never rising to 100, and patient sleeping well. The second case was sent to him while in charge of Chalmers' Hospital last September. The patient, a widow aged sixty-six, the mother of twelve children, had always been healthy until about ten years ago, when she suffered considerable pain in the right iliac region, this was supposed to have been caused by the passage of a calculus from the kidney, but from that time she commenced to increase in size, and to complain of shortness of breath and dysuria. No definite diagnosis appears to have been made by various medical men who saw her, until two years ago, when, on account of the severity of the symptoms, she consulted two doctors at Newcastle, who, after examination of the urine, pronounced the swelling to be ascitic; tapped it, and drew off twenty-one quarts of fluid. In January of the present year she was seen by Dr Morison of Hartlepool when suffering from a severe bronchitic attack. The true nature of the tumour was then diagnosed, and tapping again resorted to on account of the great dyspnoea, eleven quarts of a dark-coloured viscid fluid being removed. The symptoms again recurring, she was sent to Edinburgh on the 12th of September for operation. There was some difficulty in diagnosis, the tumour not having filled up completely, the heart being weak and slightly irregular, and a trace of albumen being present in the urine; but as there was little doubt regarding the ovarian nature of the tumour, and the patient was most anxious that something should be done for her relief, the operation was performed antiseptically on the 15th of September. The case was found to be one of simple unilocular cyst, containing eight quarts of a dark-brown viscid fluid, and having a long, narrow pedicle. This was transfixed, secured with carbolized silk, cut through and returned to the abdominal cavity; the external wound, about three inches in length, being closed by four deep and two superficial sutures. There was not a teaspoonful of blood lost during the whole performance of the operation. In this case the patient suffered neither pain nor sickness, never lost her appetite nor missed a night's rest; the temperature never rose above $99^{\circ}4$, nor the pulse above 96; and after two days both became normal, and the trace of albumen disappeared. She was fed for the first ten days on nothing but milk; the dressing was left untouched for a week, at the end of which time the wound was found completely healed by first intention, and the sutures were removed. On the

twelfth day her bowels acted, on the thirteenth she was allowed to rise, two days later she was able to take a walk in the garden and go for a drive, and on the eighteenth day she returned home to England. These facts were important as showing how an operation which twenty years ago was considered as unjustifiable, on account of the difficulties attending upon it, and the supposed almost necessarily fatal result, might in suitable cases be easier of performance, and cause less marked symptoms, local and constitutional, than many of the most trivial operations in surgery.

The Secretary, *Dr Cadell*, brought under the notice of the meeting a NEW SUSPENSORY BANDAGE which he had devised, and which was on the principle of the T bandage, but had two straps coming up behind the thighs instead of the one of the handkerchief. The suspension was extremely comfortable, and avoided the slipping of the ordinary suspensory bandage occurring especially with stout patients. Messrs Young were the makers.

Dr A. James next read a paper on TRANSUDATIONS AND EXUDATIONS, the transudations with which he dealt being the pleural, peritoneal, cutaneous, and cerebral; and the exudations being the contents of abscesses, inflamed bursæ, and inflamed joints. The purpose of the inquiries of which this paper was the result, was, he said, to discover how much the composition of these fluids was influenced by the simple physical process of filtration. The action of this in the case of the transudations was, he contended, obvious, they being simply filtrates; but the exudations had not such a simple explanation, though with them also he hoped to demonstrate the importance of taking this process into consideration. Analyses of transudations, occurring in one individual simultaneously, and due to a general cause, had shown—(1) that the amount of mineral matter remained nearly constant; (2) that the amount of organic matter presented great variations in individual cases; and (3) that the pleural transudations contained the greatest proportion of organic matter, the peritoneal the next, and those of the cerebral ventricles less, and that the subcutaneous transudations were the poorest in this respect. What he proposed to show was, that in order to find an explanation for this relationship, they would obtain considerable information by studying the physical conditions existing simultaneously in connexion with the various capillary systems. And, in the first place, if a portion of a fluid holding organic matter and salts in solution were made to filter through a membrane, they would find that the amount of organic matter passing through varied directly as the pressure; and from this they would readily conclude that—as he thought it did in fact occur—the difference in the proportions of solid constituents effused by the different capillary systems was due to the blood in these capillaries being subjected to different degrees of pressure. He did not leave out of sight other possible agents in producing this result—

such as that in the pleura, peritoneum, and cerebral ventricles, the fluids were mixtures of transudation from the capillaries and of secretion from the serous membrane—a varying composition of the blood in the different capillary systems, or a varying pressure in these different capillary systems. But, laying these out of account in this inquiry, he trusted to be able to show that in the physical conditions operating in the different cavities they had by far the most important factors in the effect in question. Arguing theoretically from the enormous aspiration which the thorax could produce, they might easily imagine that, in cases of increased pressure in the lung capillaries, or still more in cases of obstruction to the entrance of air into the lungs, they should have the transudation of fluid into the pleura correspondingly favoured. To ascertain this point he had tested it experimentally, and from his experiments was obtained precise information on two very important points: (1), That where no hindrance existed to the entrance of air into the air-cells, the inspiratory act would favour the transudation of fluid from the lung capillaries into the pleural cavity, producing hydrothorax; and (2), That, when the air-passages were obstructed, this same inspiratory force was, for the most part at least, expended in causing this fluid to transude into the air-cells, producing oedema of the lungs. In reply to the question, Was the aspiration produced by the inspiratory act sufficiently powerful to cause the transudation into the pleura of a fluid so much thicker than that transuded into the sub-cutaneous tissue by intra-capillary pressure alone? Dr James, while admitting that this aspiration power was never very great, said they must remember, on the other hand, that the intra-capillary pressure must be very small; and doing this, they could, he thought, admit that this aspiration would have the effect of causing the transudation of a somewhat larger relative quantity of organic matter. But, apart from this, concentration of the fluid would be aided by its greater amount, and the rapidity with which its watery constituent was absorbed; and, as in the chest, the negative pressure of inspiration was immediately followed by the less negative or slightly positive pressure of expiration, they could easily understand how this process would be favoured. Regarding the abdominal transudations, he thought they had in the abdomen processes at work similar in kind to those they had studied in the thorax, but less in degree. In the cerebral ventricles they failed to find the existence of conditions similar in any way to those which they had noted in the thorax and abdomen. The fluid found in these ventricles in Bright's disease was probably an increase of secretion rather than a transudation. Passing on to consider the exudations, and referring to the tabulated results of his experiments under this head, he said he was well aware that his method of experiment was not at all an accurate one, and that allowances and deductions must be made in considering those results. He was not, at the same time, aware of

any means by which absolutely accurate results could be obtained in all cases. He thought, however, he had established (1), That while there was a relationship between the tension and the acute-ness of the process, the tension varying directly with the acute-ness, yet, for various obvious reasons, this relationship was not very well marked; (2), That the tension in small abscesses, etc., was greater than in large ones, though here also the relationship was not well marked; and (3), That there was a more definite connexion between the tension and the composition of the fluid. The proportion of the mineral matter remained fairly constant, about 7 per cent. Otherwise, the opposite of what they might expect held; namely, that high tensions were associated with thick pus. The converse of this, too, held, and it was found that a thin fluid was associated with low tension.

In the course of the discussion which took place on the paper, *Dr Hayscroft* observed that there was no proof that the internal aspiratory effusion in the pleural cavity, spoken of by Dr James, existed not in health at any rate. The pleuræ, as they knew, were in close contact on the wall of the chest, united as it were by a very thin film of fluid, and the tendency of any transudation or exudation, therefore, would be into the air-cells, and not to between the two surfaces of the pleuræ. When the chest was pierced by the knife, the lungs collapsed by virtue of their elasticity, and it might be that in certain abnormal conditions they might have conditions set up favourable to transudation into the pleural cavity in inspiration, but not during health. Then, in the case of the peritoneal cavity, there was surely a perfect equilibrium during expiration and inspiration. He thought further, that the manner in which Dr James presented his experimental statistics to the Society was not such as could enable them to say what real relation there was between the tensions and specific gravities brought under their notice.

Dr Byrom Bramwell expressed the very great pleasure with which he had listened to the paper, and thanked Dr James for the great amount of information which he personally had derived from it. Limiting his remarks to the first part of the subject, he pointed out how difficult it was, in experiments such as Dr James had described, to assimilate at all accurately the conditions which obtained during life. He pointed out some of the chief points of difference, and thought that the fifth experiment hardly warranted the conclusion which Dr James had drawn from it. He was not prepared to say that there might not be some inspiratory aspiration, but he thought the absorption theory was a much better explanation of the greater thickness of the pleural fluid. If inspiratory aspiration was the chief cause of the thickness of the fluid, we should expect that, in a case of general dropsy, say from renal disease, fluid would be first poured out into the pleural cavity, whereas it is first effused into the subcutaneous cellular

tissue. Dr James might perhaps meet this by saying that it was extremely difficult to detect small quantities of fluid in the pleural cavity, whereas in the subcutaneous tissue oedema was self-evident; or that thin fluid poured out into the pleura was as speedily absorbed as effused. Still this clinical fact did seem to him a somewhat strong fact in favour of absorption as against inspiratory aspiration. With regard to Dr James's second clinical conclusion, he thought that obstruction to the trachea would be more likely to be followed by pulmonary emphysema and obstruction of the bronchi than by effusion into the air-cells. He again thanked Dr James, and expressed the hope that this would not be by any means the last paper of the sort which Dr James would bring before the Society.

Mr Hamilton said that he had listened to Dr James's paper with the greatest pleasure, and begged to tender him, along with Dr Bramwell, the warmest thanks for the trouble he had taken in bringing this interesting subject of discussion before the Society.

There was little doubt that the organism was one vast combination of hydraulic machines, consisting of a force-pump in the centre, a series of membranous tubes, and a fluid to be circulated through them; and the most of the problems connected with this subject had to be considered in terms of the different circumstances under which these three factors might be placed. Dr James had somewhat fully considered the lung—one of the most complicated of these hydraulic systems. It seemed to Mr Hamilton that the proper manner to study this organ was, in the first place, to look at it disconnected from the respiratory movements. Let us suppose, for instance, that the chest was motionless, and that the lung merely consisted of an aggregation of spaces bounded by an animal membrane, in which an abundant capillary plexus ramified, uninfluenced by the movements of respiration. What, then, under these circumstances, would be the effect of different degrees of tension of the fluid circulating in these capillary channels? This could be answered from the very beautiful experiments of Mr Newman in relation to Bright's disease. If the pumping action of the heart is increased, but if the venous aperture of exit is sufficiently free so as not to retard the outflow of blood, then there is a slightly increased transudation of fluid, and a greatly increased amount of blood passes along the vessels. The quantity which transudes in such a case is not directly proportional to that which escapes from the aperture of exit. When, however, the aperture of exit is narrowed, and even the normal cardiac pressure retained, a much greater quantity of fluid transudes through the walls of the vessels, while that which escapes from the narrowed outlet is diminished.

These experimental facts are borne out by what we actually see in every-day experience—a small amount of narrowing of a venous

channel, or, what is the same, a regurgitant venous pressure, as in mitral disease, tending to produce much greater dropsy than a mere increase of arterial tension where the venous outlets are unimpeded.

It is therefore clear that a mere alteration of blood pressure alone would be sufficient to induce hydrothorax or œdema of the lung, just as in other parts of the body. The question now came to be, whether this was the only factor in causing these effusions. In the production of a hydrothorax was there anything at work over and above mere increase of blood pressure?

Let us now suppose that, in addition to the structure we have been considering, the movements of respiration be added. Will they tend to favour the exosmose of fluid into the pleural sac?

Dr James had laid great stress upon the negative pressure in the pleural cavity as a factor in the production of hydrothorax. From various experiments it appears that the collapsing power of the lung is equivalent, even at the end of expiration, to something like five millimetres of mercury, and that this becomes much greater in full inspiration. It is clear, therefore, that there must be a constant drag, during inspiration at least, on the pleura, tending to separate its two surfaces, and this will undoubtedly favour the transudation of fluids into the pleural sac. But is this the only factor to be taken into consideration? If there is this constant drag on the pleura, why is it that hydrothorax does not occur normally? The total negative pressure of the air entering the chest during inspiration was calculated by Donders to be equivalent to from thirty to seventy millimetres mercury. This is due to three causes; namely, the elasticity of the lung, the diminished tension of the air within the chest, and the natural tendency to collapse of the chest wall. The same author, however, made out the pressure of the air during expiration to be positive to the extent of sixty-two to one hundred millimetres mercury. The air, therefore, in passing out of the chest, had a relatively greater tension than when it enters, and this, of course, can be increased almost indefinitely when the muscles of forced expiration come into play. The air in passing out of the chest must produce considerable friction. It rushes from a series of wide membranous sacs into a comparatively narrow tube with a very narrow outlet. In so doing it experiences a certain retardation to its onward progress. This obstruction will come to be opposed to the pressure exerted by the collapsing chest wall and lung; where the glottis is closed and the air within the chest compressed, as in coughing, the opposition will be enormous. On account of this the two layers of the pleura must be pressed together, and any tendency which there is during inspiration to the exosmose of fluid from the negative pleural pressure would be neutralized by this positive pressure of expiration.

Dr James, however, had referred to the assertion that, even

during expiration, the pleural cavity has a negative pressure owing to the collapsing power of the lung. This could only be if the chest wall were fixed. Were the chest wall fixed, then the tendency to collapse which the lung retains even at the end of expiration might favour transudation; but seeing that the lung never diminishes in size without the chest wall accompanying it, this really never comes into play. No doubt, if the pressure of the pleural cavity be taken during expiration, where the motions of the chest and all the other relations are not retained, a negative index would be the result. But seeing that the pleura and chest wall are never separated, and that the motion of the one exactly corresponds and is simultaneous with that of the other, such a calculation would be fallacious. They so act in concert that instead of calculating the collapsing power of the lung separately during expiration, we must look upon the two as united, and as together compressing the air within the chest in order to raise its tension, so that it may move outwards. The opposition offered by the latter will be sufficient to mutually compress the two surfaces of the pleura, and to counteract any tendency to exudation of fluid that might occur during inspiration. It is only during inspiration that the collapsing power of the lung can act upon the pleural surfaces, tending to separate them. During expiration both the lung and chest wall simultaneously collapse, and the pressure exerted by them is then expended, not in separating the two pleural surfaces, but in driving the air out of the chest.

Dr James had given two reasons why the pleural effusion should contain more solids than any other effusion. There was, firstly, the negative inspiratory pressure, tending to favour exudation of solids; and, secondly, the slight positive expiratory pressure, causing the absorption of the water, and rendering the effusion more inspissated. It seemed, however, as if the former were unnecessary; for, given a certain amount of fluid effused into the pleura, we had in the positive expiratory pressure alone a powerful means of causing absorption of its watery constituent. A person with cedema of the lung or dropsy of the pleura usually coughed, and if we calculate the enormous pressure that could be brought to bear upon a pleural effusion by this means, it can be easily understood why this fluid should be thicker than any other transudation.

In summing up his remarks the following seemed to Mr Hamilton to be really the mechanism of pleural dropsy: The fluid is poured out, as in other parts, merely on account of varying degrees of tension of the blood circulating in the respective vessels. The tendency to such effusions is great in the pleural cavity merely because the wall consists of a delicate membrane, in which vessels with thin coats abundantly ramify, and also because it is specially adapted to allow of the accumulation of such fluid, there being no support given to one side of it from the tendency which the lung

has to collapse. Fluid on this account can be effused without having much resistance to overcome. The large proportion of solids contained in the pleural effusion he believed to be due exclusively to the positive expiratory pressure, more especially that of forced expiration, as in coughing.

In conclusion, Mr Hamilton referred to a case in which he had made a post-mortem examination, and about which he had previously had some conversation with Dr James. It was that of a child who died from croupous laryngitis, croupous tracheitis, and croupous bronchitis. The occlusion of the greater number of the bronchi was complete, while the glottis was much narrowed from the fibrinous exudation on the mucous membrane. In such a case there should have been, according to Dr James's theory, great œdema of the lung. Contrary to this, however, there was not the slightest œdema of the lung, and the pleural cavities were both dry. What explanation could he offer of this apparent contradiction of the theory advanced?

Dr James having replied in support of the principles laid down in his paper, the Society proceeded to the transaction of private business.

Part Fourth.

PERISCOPE.

MONTHLY RETROSPECT OF OBSTETRICS AND GYNÆCOLOGY.

BY ANGUS MACDONALD, M.D.

PENDULUM LEVERAGE OF THE OBSTETRICAL FORCEPS is the subject of a rather strongly-worded article in the *American Gynecological Transactions* for 1879, by Dr Albert H. Smith, Philadelphia. He discusses in it the arguments for and against this motion, directing his principal attacks against the recent attempt of Galabin to justify the value of the method by a mathematical demonstration of its value, and formulates his views on the subject in the following conclusions:—1. The pendulum movements are in direct violation of the teachings of nature. 2. They are absolutely useless so far as an aid to traction is concerned. 3. Any virtue they have is in stimulating uterine contractions, which then act independently of them. 4. So far from diminishing friction, they increase the mutual pressure of the head and pelvic walls, thus increasing friction. 5. They tend to do injury to the pelvic tissues, no matter at what part of the pelvis they are practised. 6. So far from being specially useful when the head is

tightly "gripped," to use Dr Galabin's expression, and the extraction difficult, the greater the difficulty of the case, the greater, necessarily, is the injury to the tissues.

THE OBSTETRICAL FORCEPS is the subject of a long but loose and rather wild article by G. M. Maughs, M.D., in the *St Louis Medical and Surgical Journal*, advocating views in regard to the frequent use of the forceps similar to those associated with the names of Dr Johnston of Dublin and Dr Hamilton of Falkirk. The author, however, has nothing new to urge, and the paper contains nothing remarkable except its recklessness of assertion in regard to the harmlessness of the forceps when used with an imperfectly-dilated os uteri.

RUPTURE OF THE NON-PREGNANT UTERUS.—In the *New York Journal of Medical Science* for August 1879 there is an interesting report of this accident by Mr R. H. Sabin. The patient had recently suffered from a polypus which was all but spontaneously expelled, the completion of the expulsion being merely effected by a touch from a uterine sound by the attending practitioner. Subsequently hæmorrhage came on, and the patient was plugged to prevent it. The patient sank rapidly, and on post-mortem examination a rent was found running from right to left across the fundus and opening into the peritoneal cavity. No blood and only a little pus was found in the peritoneum. The uterus was about the size of the organ pregnant about four months. Mr Sabin is inclined to believe the tear was caused by gaseous distension occasioned by the plugging. [To us it appears much more probable that the rent originated in an extension of inflammatory action from the pedicle of the polypus.—A. M.]

THE TREATMENT OF EPITHELIOMA OF THE CERVIX UTERI, by J. Marion Sims, M.D., is the subject of an interesting paper in the July number of the *American Journal of Obstetrics*. Dr Sims insists strongly upon the method of thoroughly exsecting the diseased tissues, for which he employs the curette, knife, and scissors. The hæmorrhage from the larger arteries he controls by grasping-forceps during the operation. After the diseased tissues are completely removed so far as can be made out by feel, Dr Sims fills up the cavity of the cervix with portions of styptic cotton wool. These are prepared by being first steeped in solution of subsulphate of iron (1 part of saturated solution in 2 of water) or of alum (1 part of alum in 12 parts of a 2·5 per cent. solution of carbolic acid), and then squeezed dry. The cavity and upper third of the vagina are to be tightly packed with this styptic wool, and the rest of the vagina tamponed with cotton wool steeped in carbolized water. Care is taken to make sure that all bleeding has ceased before the patient is removed from the operating table. The portions of the tampon near the lower end of the

vagina are to be gradually removed in a day or two, but that in the cavity of the cervix and upper part of vagina is to be left till the third or fourth day. On the removal of the latter the cavity of the cervix is to be carefully packed with bits of cotton wool about the size of an almond, prepared by being first steeped in a solution of chloride of zinc (5 parts of salt to 8 parts of water), and then squeezed dry. The vagina is thereafter tamponed with cotton wool steeped in solution of bicarbonate of soda to prevent the irritative action of zinc chloride. The pain resulting from the action of the chloride of zinc is to be relieved by hypodermic injection of morphia. The cotton wool may be removed from the vagina on the following day, but that containing the chloride of zinc is not to be removed from the cervix till the fourth or fifth day. The vagina and cervix are then to be washed out with warm solutions of carbolic acid. The slough separates from the cervix, and the cavity granulates in the course of fifteen days or so. Several interesting cases illustrating his method are then given, and the following conclusions formulated:—1. Do not amputate or slice off an epithelioma of the cervix uteri on a level with the vagina, whether by the *écraseur* or the electro-cautery. 2. Exsect the whole of the diseased tissues even up to the *os internum* if necessary. 3. Arrest the bleeding, when necessary, with a tampon of styptic iron or alum cotton wool. 4. Be careful not to apply the tampon with such force as to lacerate the excavated cervix uteri. 5. When the styptic tampon is removed, cauterize the granulating cavity, from which the disease was exsected, with chloride of zinc, bromine, sulphate of zinc, or some other manageable caustic capable of producing a slough. 6. After the removal of the caustic and the slough it produces, use carbolized warm-water vaginal douches daily till cicatrization is complete. 7. After the cure, put the patient on the use of arsenic as a protection against the cancerous diathesis and urge the importance of examination every two or three months for the purpose of detecting the recurrence of disease. 8. Then, if fungous granulations or knobby protuberances not larger than a pea are found, lose no time in removing them, and treat the case afterwards with caustic just as in the first instance. 9. Almost every case may be benefited by operation, even when there is no hope of giving entire relief.

THE DIAGNOSIS AND TREATMENT OF OBSTETRIC CASES BY EXTERNAL MANIPULATION is the subject of a long article in the above Journal by Dr Paul Mundé, in which he runs over the various methods by which external manipulation and observation may assist and even substitute internal examinations and methods of treatment. The applications that he specially insists upon are version by the external methods; the determination of the period of pregnancy by ascertaining the exact height of the fundus uteri, according to the principles laid down by Ahlfeld and Sutizin; the determination of the presentation and position of the

child by external manipulation only, and the diagnosis of twins by the same method. He urges upon American obstetricians more attention to these methods of diagnosis and treatment. [The paper, however, though it commences in a very elevated strain, promising something fresh and new, must be confessed to be rather disappointing as a whole, and to tell even British and American obstetricians little that they did not know quite as well previously. —A. M.]

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Edinburgh School of Medicine, etc., etc.

CHLORATE OF POTASH IN EPITHELIOMA.—A writer in the *Lancet* says:—In epithelioma a *saturated* solution of chlorate of potash forms an excellent application. This was first recommended by Ledeset in 1845, and has since been experimented with by Bergeron, Le Blanc, Blondeau, Féréal, and others. Milton and Cooke published the first two cases of cure by this means in man; there is therefore nothing new in the treatment, but I wish to insist upon the fact that it is serviceable. A few weeks since, Professor Broca showed me a patient with an epithelial growth surrounding and involving both lips, which had been modified most satisfactorily by saturated chlorate of potash solution dressings.—*Medical and Surgical Reporter*, 25th October 1879.

SUCCUS LIMONIS IN TONSILLAR HYPERTROPHY.—Dr De Saint Germain of Paris has found lemon juice a very simple and efficacious remedy for the suppression of hypertrophied tonsils. In young subjects he pencils the tonsils with lemon juice twice a day. A cure is usually obtained in two weeks. He does not consider more heroic treatment justifiable till this remedy has failed.—*Medical and Surgical Reporter*, 18th October 1879.

EUCALYPTUS IN INFLAMMATION OF LUNGS.—By G. W. MALLORY, M.D., Lowell, Mich.—Mrs R., aged forty-five, sanguino-nervous temperament, frail constitution, and predisposed to lung affections, and has had several attacks of asthma during the past eight or ten years, was taken sick with inflammation of the lungs, complicated with pleurisy over the lower lobe of the left lung. The disease was ushered in with a chill of two hours' duration, then fever. Her left lung was the worst. The neighbours thought she could not recover, as they thought she had consumption. But she is making a good recovery, after being treated about three weeks. I gave her the following formula most of the time:—

Eucalyptus, fl. ext., ℥j.

Glycerine, ℥j.

Simple syrup, ℥j.

Mix. Teaspoonful every two hours. When the bowels are constipated I give—

R Cascara sagrada fl. ex., ʒj.
Aro. sgr. rhubarb, ʒj.

Mix. Take one-half to one teaspoonful every four hours.

The balsamic properties of eucalyptus, and also its antiseptic properties, make it a valuable medicine in all inflammatory conditions of the mucous membranes of the human economy, whether acute or chronic. It has a marked influence also on the organs of excretion, eliminating through them the deleterious matters in the circulation. Hence it arouses the kidneys to a greater action; it is also a stimulant to the liver. Eucalyptus, I think, may be classed as an alterative, as it seems to act well in almost all chronic affections in my hands. I will write again.—*New Preparations*. Detroit, Michigan, April 1879.

THE PHYSIOLOGICAL EFFECTS OF CAPSICUM.—Dr Hőzzes (*Archiv für exper. Pathol.*, Band ix.) has made several experiments with *Capsicum annum* and its alkaloid capscicol on cold and warm blooded animals. He found that both drugs stimulated especially the sensory nerves, increased the secretion of the gastric juice and the saliva, and quickened peristaltic action. In man, besides the above-mentioned symptoms, others were experienced, such as itching, feeling of intense heat in the mucous membranes, and a more or less considerable amount of reflex hyperæmia. The author does not consider the plant poisonous. He thinks, on the contrary, that it is a pleasant condiment, and a stimulating drug in cases of chronic weakness of digestion.—*British Medical Journal*, 18th October 1879.

SCILLAINE.—Herr M. V. Jarmersted (*Archiv für exp. Pathol. und Pharmak.*, t. xi., p. 22) proposes this name for a new alkaloid, the extract of *Urgenia Scilla*, of which it represents a large part of the active elements. It is a white or yellowish matter, without smell, bitter, slightly soluble in water, ether, and chloroform; very soluble in alcohol. It reduces Barreswil's liquor, and is transformed by heat into a resinous mass which decomposes easily. It dissolves in concentrated hydrochlorine, to which it gives a bright red tint, vanishing when heat is applied. It also gives a fluorescent brown colour to sulphuric acid, passing to red on the addition of bromide of potassium. This new product, which is the only one meriting the name of alkaloid of squill, has not hitherto been employed in medicine. Experiments made on animals show that, in large doses, it brings on diarrhœa and sickness, and that it exercises an entirely special action on the heart. In the first stage there is elevation of the blood-pressure, with diminution of the frequency of the pulse; in the second period there is, on the contrary, diminution of the pressure and increase of the frequency of the pulse. Its physiological effects being exactly those of digitaline, the conclusion is, that the diuretic action of squill can only be produced in cases in which the difficulty of diuresis is in connexion with

disorder of the circulation.—*British Medical Journal*, 1st November 1879.

PHYSIOLOGICAL EXPERIMENTS WITH ERGOT.—In a monograph on this subject by Dr Peton of Paris, reviewed in the *Medical Times and Gazette*, the reviewer says:—The most striking results which Dr Peton observed, and those which appear the best ascertained and least liable to misinterpretation, are the following: He injected ergotine at the base of a rabbit's ears. In five or six minutes both ears began to get anæmic, and the pupils to dilate; this gradually increased, and lasted several hours. Its intensity and duration varied according to the dose of ergot given. Dr Peton next divided the sympathetic in the neck of a rabbit, and dilatation of vessels and contraction of pupil on the corresponding side followed as usual. The ergot was then injected, as in the before-mentioned experiments; its administration was followed by anæmiation of the ear and dilatation of the pupil. The author then, in another experiment, divided both the sympathetic and the great auricular, and when the vascular dilatation and contraction of pupil was at its height, injected ergot. The resulting anæmiation and dilatation of pupil were as pronounced as before. To ascertain the comparative effect of injecting ergot at a greater or less distance from the part at which its action was desired, Dr Peton, after having divided the sympathetic of a rabbit on the one side, injected the drug into the buttock. Anæmiation of the ear and dilatation of the pupil followed, but not to the same degree as had been noticed when the injection was made in the neighbourhood of the part itself. When ergot was taken into the stomach, not only was a much larger dose required to produce an effect equivalent to that of hypodermic injection, but the result was slower and less certain. Dr Peton concludes that the effect of ergot is not produced through the nervous system, but that it has what may be called an elective affinity for unstriated muscular fibre, acting directly upon this structure, and that subcutaneous injection is the best and most certain mode of securing its effect.—*Medical and Surgical Reporter*, 25th October 1879.

DISEASES FROM INSUFFICIENT FOOD.—Dr Cornish, of India, observes in a recent report to the English Government:—There are two varieties of starvation recognized by all physiologists and practical physicians. The "acute" form, in which all food is withheld, as in people shipwrecked at sea or shut up in mines; and the "chronic" form, in which the daily nutriment necessary to the wants of the body is defective in quantity or quality. The "acute" form of starvation slays its units—the "chronic" form its tens of thousands. It is the latter form that we have to take notice of in seasons of dearth and food scarcity; but of late years a fashion has sprung up of referring mortality that unquestionably ought to be shown under the head of "privation" or "starvation" as due to disease, and in this way attention is diverted from the real fount

and origin of excessive death-rates. When the food supplies of a people are insufficient to sustain life, and all the tissues of the body have wasted, the mortality occurs mainly as a result of the feeble powers of assimilating food. After the victims of chronic starvation get into jail, there is no lack of suitable and nourishing food; and if the issue of nutriment to persons in an advanced stage of chronic starvation can save life, there should be no famine mortality in jails. But experience, whether in jails or famine-relief camps, tells precisely the same story; viz., that there is a stage in the downward progress of those whose food has been habitually insufficient, from which recovery is impossible. When the powers of digestion and assimilation are impaired, diarrhoea, dysentery, and dropsies set in, the symptoms of which are unrelievable by food or medicine, and death follows. The diseases resulting directly from privation have killed in jails more than three times the number that were cut off by cholera or other epidemic pestilence.—*Medical and Surgical Reporter*, 25th Oct. 1879.

PERISCOPE OF OTOLOGY.

By DR KIRK DUNCANSON, Surgeon to the Ear Dispensary, 6 Cambridge Street; Assistant-Surgeon, Eye Infirmary; Lecturer on Diseases of the Ear, Edinburgh School of Medicine.

IN a recent part of the *Zeitschrift für Biologie*, Herr Carl Nôrr published the results of some experiments made by him with a view of determining the power of the human ear for distinguishing different intensities of sound. The experiments were made with leaden balls. Herr Nôrr made seven different series of experiments, each with a definite intensity of sound, which varied from a just perceptible one to one 500,000 times as loud. The results showed that the percentage of correct determinations made by the ear, decreased as the difference in intensity between any two sounds compared increased. When the difference in intensities remained the same, the percentage of correct determinations was the same both for loud as well as for scarcely audible sounds. A calculation of the numbers of correct determinations found by the experiments showed that the power of distinguishing the intensities of sound follows Fechner's law most closely; i.e., that the measures of sensitiveness stand in the same proportion as the reciprocal values of the square roots of difference of intensities of sounds.—*Nature*, September 25th, 1879, p. 514.

THE AQUÆDUCTUS COCHLEÆ IN MAN.—The aquæductus cochleæ is usually described as a simple passage serving merely for a vein which collects the blood from the cochlea and conducts it to the jugular vein. By means of injections, the method of using which is fully given, Weber-Liel now claims that the aquæductus cochleæ contains no vein, but forms a free canal, lined with a continuation of the dura mater, which unites the scala tympani of the cochlea with the intracranial cavity. Also he finds that from just behind

the bulb of the jugular vein, or else from the sinus petrosus inferior, near the bulb of the jugular, a vein passes into the entrance of the aquæduct, and then enters a separate osseous canal parallel with the aquæduct, and finally connects with the scala tympani by its own separate opening from one third to one quarter millimetre distant from the opening of the aquæductus proper.—(Weber-Liel).—*Monatschrift für Ohrenheilkunde*, No. 3, 1879.

ON THE TREATMENT OF OSSEOUS TUMOURS OF THE AUDITORY CANAL.—We have here the experience of Dr Bremer of the treatment of an exostosis in the auditory canal of a Danish naval officer. There were bony growths in both canals, the largest being in the right, and here we suppose the operation was performed. The right canal was entirely occluded by an osseous growth situated 22 mm. from the mouth of the passage, and extending from the upper, the posterior, and the inferior walls. The patient having been anæsthetised by chloroform, a fine flexible saw was first tried, but was abandoned, as it could not be properly worked. By the use of a pair of strong scissors a small piece of the tumour was cut off, the bleeding following being kept under by the application of cold. During the rest of the day cold applications were kept to the ear, and with morphia the patient slept that night. An abundant suppuration followed. The next attempt to remove the exostosis was by means of the "dental engine," as previously suggested by Dr Mathewson of Brooklyn, with the patient under chloroform. Dr Bremer says that after employing this instrument a few moments he dared not continue, as it seemed to him to act with too much force, and he feared he would injure the membrane of the drum. Our author then returned to the scissors, with which in a short time he cut through the bony growth, as upon sounding he came upon an elastic body!!! The hemorrhage was considerable, and was treated with cold water as before. The suppuration was copious, and granulations were numerous, but the ear was kept clean with warm-water injections, and the granulations were touched with nitrate of silver. For fourteen days the canal was kept open by means of conical pieces of laminaria digitata, which were put in place in the early morning and removed at noon: each piece was provided with a string, by which the patient could remove it if the pain should become insupportable. In five weeks the hearing was restored. When the healing was complete, it was found that an oblong opening four mm. long had been made in the tumours, and that the membrana tympani could be seen beyond. The writer concludes that the dental engine can be used only in the tumours near the mouth of the canal.—(Dr Victor Bremer of Copenhagen).—*Annales des maladies de l'Oreille*, etc. Paris, 31st Dec. 1878.

AN UNUSUAL CASE OF PURULENT INFLAMMATION OF THE TYMPANUM.—A child nine years old had suffered for eight days only with acute inflammation of the tympanum, the ears

previously having been healthy. Examination showed the usual appearances of this disease, with perforation of the drum membrane below the umbo. After cleansing the meatus and drying it thoroughly, Katz found that pressure upon the internal jugular vein immediately forced pus through the perforation; and as soon as the pressure ceased the discharge through the perforation ceased. This phenomenon was noticed on three successive days. A burrowing abscess below the tympanum was very unlikely from the appearances; and also from the fact that the flow of pus was produced only by pressure upon the jugular, and not by pressure at any other spot. Katz considers, and probably correctly, that the floor of the tympanum over the jugular fossa was defective either from caries or congenital malformation, so that pressure upon the vein, by distending its bulb, forced the pus which lay upon the floor of the tympanum up through the perforation. Caries seems, as he says, very improbable from the short duration of the disease, and there is every probability that there existed a congenital dehiscence such as has been described by many observers. It is to be regretted that the final result of the disease is not given, as phlebitis of the vein could easily follow from its intimate relation with the seat of inflammation.—(Dr L. Katz.)—*Berliner klinische Wochenschrift*, No. 16, 1879.

PURULENT DISCHARGE FROM EAR: CEREBRAL ABSCESS.—Dr Thomas Barr showed the left temporal bone of a young man, aged 17, who died after a fortnight's illness. The patient had previously suffered from no offensive purulent discharge from his head for about two years. During the last ten days of life he had suffered from vomiting, pain in the head, stupor, tremors, and convulsions. A small polypus was seen in the tympanic cavity, and the tympanic membrane was found to be destroyed. On post-mortem examination, Dr Coats, pathologist, found the left temporo-sphenoidal lobe of the brain adherent to the bone beneath, with its convolutions flattened and partially obliterated. On section of this lobe, the brain substance was quite pulpy, and in its interior was found an abscess containing dirty greenish decomposing pus, which exhaled a most offensive odour. The abscess was lined by a soft bluish layer. Over the temporal bone the dura mater was adherent, and of a blue colour. At one place it was softened and destroyed, so that a probe could be passed directly into the petrous bone. There were two carious openings of considerable size in the bone: one was in the roof of the tympanum; the other in the groove for the lateral sinus communicated with the mastoid cells.—*Glasgow Pathological and Clinical Society, Tuesday, October 28th, 1879.*

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., F.R.C.P., Lecturer on Diseases of the Skin,
Edinburgh School of Medicine.

CONTRIBUTION TO THE HISTOLOGY OF PSORIASIS VULGARIS.—Professor Neumann has a paper on this subject in *Stricker's Medizinische Jahrbücher*, 1879, in which he expresses the latest conclusions he has arrived at. He finds that the cylindrical cells which, in normal conditions, form a single row next the papillæ of the cutis, set with their smaller extremity next the papilla and their larger directed outwards, form in psoriasis 2, 3, or 4 rows. (?) In the processes of rete mucosum, which dip down between the papillæ, the prickle cells are numerous and distinct, and traces of the prickles can be found in the upper layers of the rete, even into the stratum lucidum. He also describes outgrowths from the cylindrical cells at the deepest part of the rete, situated between the papillæ. These outgrowths thrust their terminations between the intervening cells from opposite sides, so as nearly to touch, and thus give the semblance of a network. (Though Neumann, in his text, gives this description, and says the outgrowths start from the cylindrical cells, in the illustration these are seen to proceed from the basement membrane which we have for the first time described as underlying the cylindrical cells—*E. M. J.*, January 1879—and are identical with the processes sent up between the cylindrical cells by the basement membrane, which we have there figured.) He still holds to his view that the papillæ are enlarged, though the pathological changes in the cutis are, as a rule, confined to its most superficial layers: only in cases of great severity do these extend to the deeper. The meshwork of the papillæ is dilated, filled with round cells, their bloodvessels enlarged, with increase of their endothelium, while they are often pear-shaped, due to the interpapillary process of rete mucosum being wider below than above. There is also an increase in the epithelial elements of the hair follicles and sweat glands. "In advanced cases I found those outgrowths from the hair follicle, which I had already met with in other diseased processes (lichen ruber, prurigo), but not to so great an extent: these outgrowths stood in direct relation to the increase in the lining cells." There is, in fact, hypertrophy of all the epithelial elements of the skin. "From all this it will now be more clear how the scales in psoriasis renew themselves so rapidly after their removal, since to their regeneration the cells between the papillæ, the lining cells of the sweat and hair follicles, and the cells situated over the papillæ all contribute. Although it is especially from the cylindrical cells that the new formation of young epidermis proceeds, other layers of cells, though in a less degree, must possess the like property, of which sufficient proof is afforded by Reverdin's discovery of the property of being trans-

planted which epidermis possesses." Hyperæmia has an important bearing on the nature of psoriasis, and all those influences which lead, in persons disposed to psoriasis, to the induction of hyperæmia favour the outbreak of the disease, while those which lessen congestion have an opposite effect. Neumann's paper is little more than a reproduction in other words of Dr Robinson's researches and our own, though these are merely alluded to in a short note, the German professor assuming all the credit to himself.

ADDISON'S DISEASE.—An account of an uncomplicated case of Addison's disease in a man of 50 years of age is given by Jacquet. Clinically, besides increasing feebleness, the only noticeable symptom was copious diuresis. The sectio showed old, partially cretaceous masses of caseation in both apices, an old cured coxitis with bony ankylosis—nothing else, except that in both supra-renal capsules there were numerous nodules which had undergone caseous metamorphosis, and contained chalky concretions. The ganglion cells in the neighbouring sympathetic ganglion (G. semi-lunare) were more highly pigmented than normal, several nerve filaments in the plexus round the supra-renal capsules were degenerated. The origin of the caseation in the supra-renal capsules the author regards as brought about by a tubercular deposit which had affected the person several times—had first occasioned the lung disease, then the coxitis, and finally that of the supra-renal capsules. From the last proceeded the destruction of the glandular parenchyma, the degeneration of the nerve filaments, the deep pigmentation of the ganglion cells J. regarded as a part of the general bronzing. These appeared to the author to be symptoms of the retention of a material which, under normal circumstances, experienced a transformation in the supra-renal capsules, and thus the bronzing might be looked on as analogous to a chronic uræmia. According to him, there are cases in which bronzing is connected with disease of other blood-glands. He hints at the necessity of examining chemically the blood and urine of such patients during life.—*Centralblatt f. d. Med. Wissenschaften*, 23d August 1879.

PERFORATING ULCER OF THE FOOT.—Englisch (*Wiener Med. Jahrb.*, 1879, s. 81) has collected 109 cases of perforating ulcer of the foot, independent of those forms of ulceration arising in connexion with leprosy, syphilis, and cancer. Five of these came under his own observation. He found that the frequency of this disease increases in regular proportion from the heel to the toes, but in its localization it keeps to the distribution of the bursæ mucosæ on the sole of the foot. So far this localization corresponds with that of callosities, which, however, in no way, as a comparison with ulcers or callosities on other parts of the body shows, imparts to the ulceration its specific character. After

Englisch reviews the neuro-paralytic theory of the perforating ulcer, he comes to the conclusion "that it is an inflammatory and ulcerative process, occasioned by a peculiar change taking place uniformly in the vessels, which corresponds to the endoarteritis obliterans of Friedlander or proliferans of Billroth. With reference to the ultimate cause of this endoarteritis, Englisch observes that many authors state how an extreme chilling has preceded the disease, from which the frequent bilateral or symmetrical occurrence of the disease can be explained. Besides, Englisch agrees with Friedlander that, under the influence of tuberculosis, also, changes of the skin and its vessels can be set up which present similar characters as the perforating ulcer, in particular its markedly chronic course, with a not unfrequently continuous rise of temperature. Englisch can, in relation to the age at which it occurs, well establish a predilection for the fifth decade, but no direct influence of more advanced years.—*Centralblatt f. d. Med. Wissenschaften*, 30th August 1879.

ON THE COMBINATION OF LUPUS AND CARCINOMA.—Kaposi (*Viertelj. f. Dermat.*) has thrice remarked the combination of lupus and cancer. Two of these have been already described. The third affected a day labourer, forty-three years of age, who had suffered from lupus on various parts of the body for thirty years. In the centre of a large patch of lupus on the upper arm there was a prominent tumour, warty in character, of the size of the fist, which secreted a rank-smelling discharge and was gangrenous in parts. This was separated by a furrow 4 mm. broad from the surrounding lupus surface, and had developed in the course of a few months. The tumour was an epithelial cancer, whose cancer elements pushed their way between the lupus nests. Kaposi insists that a structural transformation between lupus and cancer in ordinary cases of lupus can scarcely be accepted in endeavouring to find some histogenetic reason for the development of cancer out of lupus. But in lupus epithelial hyperplasia occurs in an abnormal form, in which the rete pushes down long projections into the inflamed and lupus-infiltrated corium. These form a mesh-work of epithelial cells in the latter, and convey the impression of an epithelioma. Kaposi sees in such a non-typical cell growth, when associated with lupus, the basis and opportunity for the development of cancer, the further rapid progress of which in the lupus areas is easily explained by its pathological nature. The operative removal in this case was conducted by means of an elastic ligature, by the galvanic cautery, and later on by destruction by caustic potash. The result was favourable. Kaposi suggests, as useful in such cases, the painless cauterization by an ointment of pyrogallie acid, which he has recently had under trial.—*Centralblatt f. d. Med. Wissenschaften*, 6th September 1879.

PERISCOPE OF OPHTHALMOLOGY.

By GEORGE A. BERRY, M.B.

REMARKS ON THE ROUTINE USE OF THE OPHTHALMOSCOPE IN CEREBRAL DISEASE.—(London: Churchill.)—In this pamphlet Dr Hughlings Jackson again draws attention to the importance of ophthalmoscopic examination in cases where symptoms which might be referable to cerebral disease are present. The habit of examining the optic discs in all such cases is the more important, as frequently no clue is afforded by the state of the patient's vision, which may be perfect even although an evident and even an extreme degree of optic neuritis exists. This fact the author not only strongly insists upon as a conviction derived from his own extensive observations, but also quotes similar statements from the writings of Graefe, Manthner, Liebreich, Carter, Wecker, Albutt, and others. He relates a case in which tumour and cyst of the right lobe of the cerebellum was found after death, and remarks—"For some time this patient had only three symptoms, the three so often found together, viz., headache, vomiting, and double optic neuritis. Now, at the most important stage of the case the third symptom (optic neuritis), as I have said, would not exist for those who do not use the ophthalmoscope *by routine*. Without it the diagnosis would have been erroneous. It is true that from *very* severe headache and vomiting we may *guess* intracranial tumour; but who *would* ever guess it in a perfectly healthy-looking, blooming girl, who was in good flesh, and occasionally apparently absolutely well. This, indeed, is the *beau-ideal* of a case to be mistaken early in its course for 'disease of the liver.' How often do we hear of amaurosis caused by 'bilious fever'! To encourage such a mistake was the fact that the girl had always been subject to 'bilious attacks.' Another mistake would be hysteria. Neither of these mistakes could be made if the patient's optic discs were looked at. We did look at them, and from what we saw we were absolutely certain that there was intra-cranial disease, and we predicted tumour." With reference to the treatment of optic neuritis when taken in time, Dr Jackson says—"In all the cases I have seen of recovery from optic neuritis, the patients had taken large doses of iodide of potassium. Whether they would have recovered if left alone—that is, whether sight would have failed—I cannot tell. My belief is, however, that iodide of potassium administered in the earliest stage of optic neuritis would save many from blindness. It can, of course, do no good for the tumour (unless it be syphilitic), but it does, I think, for the inflammation of the optic nerves."

CASE OF EMBOLUS OF ONE OF THE BRANCHES OF THE ARTERIA CENTRALIS RETINA.—Herter (*Centralblatt f. Angenh.*, September) describes a case of the above. The embolus was found to plug

the principal descending branch of the central artery at a point close to its origin, producing absolute defect of the whole upper part of the field of vision, the boundary line being almost horizontal, and close up to the point of fixation $V = \frac{1}{2}$. Slight improvement took place subsequently.

NOTES ON INTRA-OCULAR LESIONS PRODUCED BY SUNSTROKE.—Hotz (*American Journal of the Medical Sciences*) describes several cases in which, after prolonged exposure to the scorching rays of the sun, severe headache, lasting for several weeks, was accompanied or followed by a certain amount of optic neuritis, which, curiously enough, in all the cases appears to have been unilateral. As sunstroke is known to produce congestion of the intra-cranial sinuses, etc., he considers that the cerebral irritation thus arising is communicated to the sheaths of the optic nerve, producing perineuritis and neuritis. Hotz, therefore, holds a different view from Macnamara, who believes that the irritation begins in the retina. According to Hotz, if Macnamara were right he should expect to find the macula lutea the part most affected, and not the optic nerve. The ophthalmoscopic appearances, however—absence of scotomata, etc.—show that this is not the case. Besides, sunstroke and heat-stroke produce the same effect on the nerve. The prognosis is favourable, unless the cases be more severe than is usually the case.

ON THE COMPARATIVE ACUTENESS OF VISION AND COLOUR-VISION BY DAYLIGHT, GAS-LIGHT, AND ELECTRIC LIGHT.—Cohn has, under the above title, published (in the *Archiv f. Augenh.*, vol. viii., p. 408) an extremely interesting account of his experiments on the influence of different degrees of illumination on the form and colour senses. The following abbreviations, which the author has adopted, and which we merely alter so as to make them more readily comprehensible for English readers, enables us to avoid a great amount of repetition in the statement of the results arrived at:— V = acuteness of vision for form. CV = acuteness of vision for colour. Then, by the addition of e, d, and g, for electric, day, and gas-light respectively, any combination, such as the following CVe (acuteness of colour-vision by electric light) can be readily understood. The most important results are then:—

1. In one lot of cases examined, $Vg = Vd$, in another $Vg < Vd$ from $\frac{1}{16}$ to $\frac{1}{10}$; very seldom indeed, and only with Burchardt's tests, was $Vg > Vd$ by about $\frac{1}{16}$.

2. $Ve > Vd$ in almost all cases; improvement $\frac{1}{16}$ to $\frac{1}{10}$ for Snellen's tests; $\frac{1}{16}$ to $\frac{1}{10}$ for Burchardt's. $Ve > Vg$ always; improvement, $\frac{1}{16}$ to $\frac{1}{10}$ (Snellen), $\frac{1}{16}$ to $\frac{1}{10}$ (Burchardt).

3. With increased illumination a corresponding boundary for the greatest value of V , both for Snellen's and Burchardt's tests, is reached, viz., $V = 1$, $\bar{5}$ Snellen = 3 Burchardt, which = visual angle of 45" Snellen, and 42" Burchardt, and corresponds to a retinal image of about .003 mm.

4. Gas-light increases CV generally when $CVd < 1$, otherwise diminishes it.

5. CVe almost always $> CVd$: for red, from $\frac{1}{8}$ to $\frac{1}{4}$; for green, $\frac{1}{8}$ to $\frac{1}{4}$; blue, $\frac{1}{8}$ to $\frac{1}{4}$; and yellow, $\frac{1}{8}$ to $\frac{1}{4}$.

6. CVe always $> CVg$: for red, 2-6 times; green, 2-4 times; yellow, 2-5 times; and blue, $1\frac{1}{2}$ -2 times.

Pathological Cases.—1. In atrophy of the optic nerve, $Ve > Vd$ (Snellen) = Vd (Burchardt); CVe, on the other hand, $> CVd$.

2. In detached retina and choroido-retinitis Ve and $CVe > Vd$ and CVd .

ON THE BEHAVIOUR OF THE IRIS OF THE EEL TOWARDS DIFFERENTLY COLOURED LIGHT (*Centralblatt f. die Med. Wiss.*, 27th September).—Gysi and Luchsinger found that the freshly excised iris of the eel contracted on exposure to light, dilating again when the light was removed. The light was allowed to pass through thick plates of ice, thereby excluding effects of thermal rays. Blue and green rays were the most active, the yellow having little, and the ultra-violet no effect.

FOUR CASES OF COLOBOMA VAGINÆ NERVI OPTICI, WITHOUT IMPLICATION OF THE UVEAL TRACT.—This interesting state of arrested development of the optic nerve has only, up to the publication of Dr Nieden's paper (*Archiv. f. Augenh.*, vol. viii., p. 292), been recorded thrice. Two of Nieden's cases occurred in each eye of the same individual, a patient in Sæmisch's clinic at Bonn. The other two cases are from the German hospital in London, the first of which presented itself ten years ago. The four cases presented different degrees of arrested development. We must refer those interested in the subject to Dr Nieden's paper for a detailed account, where they will also find excellent woodcuts of each case.

ON THE USE OF JABORANDI AND PILOCARPIN IN OPHTHALMOLOGY.—Landesberg (*Archiv. f. Augenh.*, vol. viii., p. 260) considers pilocarpin invaluable for the clearing up of intraocular hæmorrhages and opacities of the vitreous. He gives a number of illustrative cases *in extenso*, but seems rather to overlook the possibility of improvement taking place without the use of this absorbent. As a myotic, he considers pilocarpin decidedly inferior to eserine; besides, it is apt to give rise to an inconvenient flow of tears.

ON MYOTICS AND MYDRIATICS.—At the second meeting of the Ophthalmological Section of the International Medical Congress at Amsterdam, Prof. Doijer of Leyden read a paper on this subject. The results of his investigations have been as follows:—

Myotics.—1. Eserine acts more strongly than pilocarpin, in the proportion of 32 to 1.

2. In small doses eserine only affects the pupil; pilocarpin, however, even in the smallest doses, both the pupil and ciliary muscle.

3. Although myosis from eserine is more intense, it does not last so long as that produced by pilocarpin.

4. The time elapsing between the instillation and action of eserine varies according to the strength of the solution used. In the case of pilocarpin, a quarter of an hour elapses, whatever be the strength of the solution.

Mydriatics.—1. The relative proportions of gelsemine, atropine, daturine, and duboisine necessary to produce complete paralysis of accommodation are $\frac{1}{24000} : 1 : 1, 7 : 2, 5$.

2. The paralytic action of gelsemin ceases after two hours, whilst that of the other three agents lasts for twenty-four hours.

3. In all cases, the action on the pupil precedes that on the accommodation.

4. During the dilatation of the pupil of the eye to which the mydriatic agent has been applied, a contraction of the pupil of the other eye takes place.

5. Gelsemine is apt to produce vomiting.—*Klinische Monatsblätter*, October.

IN the *Glasgow Medical Journal* for April 1878 appeared a short paper by Dr Cameron of Dr Potts's Fracture of the Fibula. In this article the ordinary mode of production of the fracture, the displacements, and the difficulties met with in treatment, are well described. We agree with Dr Cameron that the tendency to displacement backwards is the most difficult to overcome. Dr Cameron does not mention what we think we have observed, viz., that, in that modification of Potts's fracture where the internal malleolus is fractured instead of the ligament being torn, there is most tendency to displacement of the foot backwards, and this displacement is most easily counteracted. In other words, there is greater mobility of the parts.

Dr Cameron's treatment is "Dupuytren's pad, splint, and two rollers." For displacement backwards, "Syme's horseshoe splint." "In about a fortnight the limb may be put up in two lateral pasteboard splints."

CORRESPONDENCE.

To the Editor of the Edinburgh Medical Journal.

SIR,—As my friend Mr George A. Berry has, I am sure quite unintentionally, done some injustice to the Edinburgh Medical School in his paper on "the Treatment of Cases of Primary Keratitis" published in the November number of your Journal, I think it right to ask you to set before your readers one or two facts bearing upon the matter.

Mr Berry states that the plan of treating corneal abscess or of suppurative inflammation of the corneal wound after cataract operation by a strong solution of nitrate of silver, though it has been

employed by Mr Liebreich, is little known, if known at all, to other British oculists, and seems to imply that it was first suggested by Dr Hansen of Copenhagen.

Now the fact is, I saw my colleague, Mr Walker, treat a case of suppurative inflammation of the cornea following extraction in this way more than five years ago, and I was so impressed with the success of the treatment that I have ever since employed the method in similar cases, and have regularly pointed out to my classes its value.

I was the less surprised at the result, seeing that for at least five or six years previously I had been accustomed to use this treatment in some of my cases of corneal abscess, and that I had been in the habit of pointing out to the students, both at my clinique and in the systematic lectures, that certain cases of the kind improve under this treatment, while others do best with atropine. At the Bath meeting of the British Medical Association in 1878 I referred to this in a discussion which arose in the ophthalmological section.

It may be worth while to mention what I have for many years taught as the result of my experience, that cases of corneal inflammation or ulceration in which a mucous or muco-purulent secretion is present in sufficient quantity to gum together the eyelashes into bundles or to cause agglutination of the lids during sleep, are as a rule benefited by the application of a strong solution of nitrate of silver, while in those cases in which the lachrymal secretion predominates atropine is more useful.—I am, Sir, your obedient servant,

D. ARGYLL ROBERTSON.

EDINBURGH, 19th November 1879.

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